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February 28, 2000

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Volume 17, Number 9

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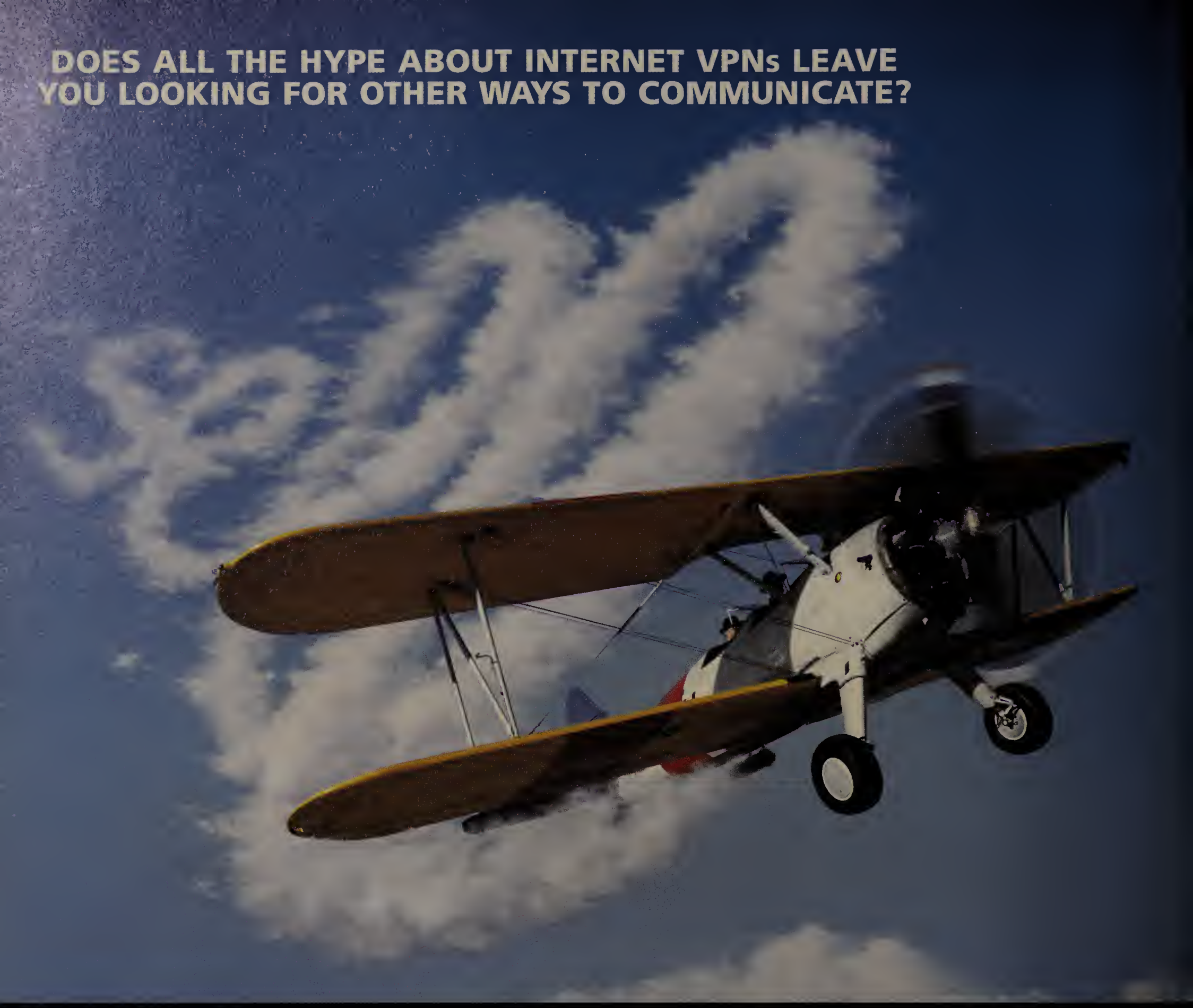

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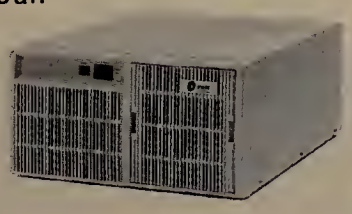

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CIRCULATION: Phone: (508) 490-6444; Fax: (508) 490-6444; E-mail: nwcirc@nww.com; **STAFF:** See the masthead on page 16 for more contact information. **REPRINTS:** (717) 399-1900

Fig 1. Compact Fully Integrated Security System

Fig 2. Ditto

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RESEARCH

Spider Bytes: The Web's best tools and tips

It's voice-over-IP week here at Fusion:

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- Dig through VoIP market and technology research. **DocFinder: 7022**
- See what sort of DSL service is available in your area with our DSL lookup service (offered in cooperation with Telco Express). **DocFinder: 6933**

INTERVIEWS

Exclusively online at DocFinder: 7040

NetworkWorld Q&A

James Richardson is the new general manager of Cisco's Enterprise line of business. Last week he talked to *Network World* Senior Editor Jim Duffy about:

- Cisco's 10G bit/sec Ethernet plans.
- How competitors' plans affect Cisco.
- Cisco's network priorities.
- Why IP telephony is important to the company.

COONEY'S CORNER

The best of NetFlash daily news

New hacking tools released to attack Web sites

Can't these people find a new hobby? Hackers have released new tools that could make attacks like those that temporarily shut down Web sites such as eBay and Amazon.com even easier. The new tools could misuse systems based on Windows NT, 95, 98 and 2000 to launch massive amounts of data that could overwhelm a Web site. **DocFinder: 7041**

Manual workaround for Bell Atlantic/CLEC problem

Long-distance service isn't as easy as you thought it was going to be, eh, Bell Atlantic? Trying to salve some service wounds, Bell Atlantic says it is now processing orders from competitive local exchange carriers on time, following recent allegations that it missed installation dates on tens of thousands of CLEC orders in New York state. But Bell Atlantic also admits it's doing a lot of the work manually and hasn't found a permanent fix for an ongoing logjam of orders in its electronic CLEC ordering system. And in a report to state regulators filed last Tuesday, Bell Atlantic also revealed that it may scuttle the electronic system if it can't find out soon why it has been holding up orders. **DocFinder: 7042**

Hewlett-Packard builds storage options

Storage administrators for large corporate nets will be able to more easily and safely manage stored data with software HP announced last week. The company also expanded its program that lets quickly growing companies lease processing power and storage capacity on an as-needed basis. HP will make storage capacity on the XP256 disk array subsystem available to rapidly growing customers who find it difficult to project their storage needs. **DocFinder: 7043**

— Michael Cooney, associate editor, News

Sign up for this e-mail newsletter online. DocFinder:3850

FORUMS

"No matter how I sliced it, I never got the Token Ring costs down to less than two times the Ethernet costs."

— from the "Upgrade Token Ring or move to Ethernet?" forum, DocFinder: 7021

Other Forum topics:

Get your e-commerce questions answered.

Theo Forbath, director of Northeast Consulting Resources in Boston, is online this week to talk about successful strategies. **DocFinder: 7027**

SEMINARS & EVENTS

The high-performance Web: Building a world-class e-business infrastructure

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COLUMNISTS

Help Desk

All the time

Problem: A reader is setting up a Network Time Protocol server and wants to know how to get workstations in his domain synchronized with that machine.

Solution: It depends on the clients. Windows NT clients can use the timeserve service that comes with the NT Resource Kit. Windows 9x clients can be fitted with any of several third-party options. **DocFinder: 7024**

Water Cooler: Get better, Pat

Network World Fusion Editor Adam Gaffin remembers the old days on Usenet, when newsgroups actually carried useful information instead of endless spam for X-rated Web sites. One grizzled veteran from the early days is Patrick Townson, moderator of the Telecom Digest (a.k.a. comp.dcom.telecom). Townson recently posted why the digest has been silent since Thanksgiving.

DocFinder: 7023

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News

Novell, Tivoli aim to bolster network security

Novell's SecureMe appliance designed to safeguard e-comm, intranet sites.

Tivoli coordinates efforts of security devices/tools.

BY DENI CONNOR

PROVO, UTAH — Novell next month will unveil an Internet appliance designed to speed secure access to e-commerce sites and corporate intranets.

The company is expected to demonstrate this security appliance, code-named SecureMe, at its BrainShare customer conference in Salt Lake City from March 26 to March 31. SecureMe provides access, authentication and secure communications over the Internet, while regaining the speed lost by servers in processing secure transactions.

New service information

Also at BrainShare, Novell will release information on an upcoming service that lets users and companies store information on the Internet as if the data were stored on another network drive. The company is also expected to give more details of plans to integrate applications with DirXML, its directory-enabled XML technology, as well as its new Novell Directory Services (NDS) Filtered Replication, which lets companies take subsets of their directories and share them with customers, partners and users.

The SecureMe appliance

Novell's SecureMe appliance is an in-flow security device that sits between the Internet and a Web caching server. The device takes HTTP requests, decrypts them and passes them to the Web server for processing. It re-encrypts them on the way back to the user.

The SecureMe appliance uses encryption-decryption algorithms to pass secure traffic. The device decrypts scrambled traffic on the way into the network before passing it to a Web server, Web-caching device or load-balancing device. By doing that, the servers don't have to spend processing time on decryption. The box then encrypts the traffic on the way back out to the Internet.

The SecureMe appliance also uses public-key infrastructure (PKI) to provide directory-enabled public-key cryptography and digital certificates. It can use digital certificates from third-party vendors or those from its Certificate Server. SecureMe is also NDS and Lightweight Directory Application Protocol-enabled.

"SecureMe will take the burden off the Web server," says James Cimino, president

See **Novell**, page 126

BY MARC SONGINI

AUSTIN, TEXAS — Worried about a hacker crashing your Web site, despite the arsenal of security tools you have in place? Tivoli this week will attempt to address such concerns with software it claims can unite disparate security products to fight off denial-of-service attacks and other types of net assaults.

Called SecureWay Risk Manager, the product can field alerts from separate security products, such as firewalls and virus detection programs. It can then present information based on the alerts in a single management console that gives a more complete picture of a company's network security status.

Tivoli's new software, based on technology created in IBM research labs, can also be used to test networks for potential security weak spots and to distribute security patches.

Denial-of-service attack code does Windows. Page 12

Tivoli is targeting organizations with high-profile Web sites as well as universities and other sites whose computers might be used without the knowledge of their owners to launch attacks like those that stymied Web sites such as Yahoo and eBay earlier this month.

Risk Manager, which initially will run on Windows NT, includes a translation engine that can accept data from assorted security products via SNMP or other means. The engine translates the data into a common format that can be understood by Risk Manager's correlation engine. This technology has been in development for the past year at the IBM Zurich research lab.

The correlation engine can be programmed with rules from the IT staff and acts as the communications and command center for all of a network's security needs. So for

See **Tivoli**, page 126

One year later: iPlanet still looking to get into e-commerce groove

Bell Atlantic mess won't help Sun-Netscape venture's cause, though new application server could help bolster offerings.

BY JOHN COX

The Sun-Netscape Alliance is about to celebrate its first birthday by cleaning up an embarrassing public failure with a major customer — Bell Atlantic.

The Alliance, now called iPlanet E-Commerce Solutions, has been targeting its server software and electronic commerce applications at large Web sites and e-businesses, emphasizing the software's ability to handle lots of traffic and transactions.

But for weeks, iPlanet's ECXpert software, which Bell Atlantic is using for the exchange of documents and messages among trading partners and competitors, reportedly has been dropping orders submitted to Bell Atlantic by local competitors who have lured away the telephone company's residential customers (see sidebar, page 128).

IPlanet's Mark Tolliver acknowledges the firm stumbled early on.

While ECXpert wasn't entirely to blame for the carrier's problems, Bell Atlantic specified that the software failed to generate notices of orders received and suffered performance problems as activity increased. A Bell Atlantic official even hinted last week that the telco's IT department was close to scrapping the iPlanet software, at least temporarily.

IPlanet executives declined to comment on the Bell Atlantic situation, but the software maker's experience with the carrier underscores the opportunities and obstacles facing iPlanet in the fast-growing market for e-commerce products.

The company, which formed shortly after America Online bought Netscape early last year as part of a complex three-way deal involving Sun Microsystems, is considered by many to be a solid contender in the e-commerce software market. At the same time, the company is still struggling to carve out an identity.

Despite a deceptively simple product roadmap laid out last spring, iPlanet has confused some customers. The plan called for maintaining interim releases of existing Sun and Netscape products; making fast decisions about which products to keep and dump; getting their respective products to work smoothly with each other; and, finally, releasing new versions under the iPlanet brand.

For the most part, iPlanet has shipped its software on time. But one customer mentioned major problems with the Web server released last fall. That product trails in the market far behind Microsoft's Web server and the free Apache Web server.

Other customers were spooked at the uncertain future of iPlanet and held off buying the well-regarded

See **iPlanet**, page 128

NEWS BRIEFS, FEBRUARY 28, 2000

IETF's dilemma down under

Lower-than-expected interest in the next Internet Engineering Task Force meeting in Adelaide, Australia has prompted a debate about the global nature of the organization. The IETF hosts three face-to-face meetings a year, two of which are usually in the U.S. The next meeting, March 26 to March 31, is the first in Australia. Because of the expense and time associated with traveling to Australia,

some U.S. participants are having a difficult time justifying the trip to their employers. Griping has prompted IETF leaders to reaffirm their commitment to being a global organization. IETF leaders have clamped down on working groups that wanted to forego meeting in Adelaide and instead hold so-called "interim meetings" in the U.S. The hubbub should die down, however, as the group's summer meeting is in the heartland: Pittsburgh.

Art Technology settles patent suit

Boston-based software vendor Art Technology Group last week agreed to pay e-commerce software vendor BroadVision $15 million to settle a patent infringement suit filed by BroadVision in December 1998. BroadVision asserted that Art's Dynamo product infringed on the patented personalization technology used in BroadVision's One-to-One e-commerce product. BroadVision also accused Art of plagiarizing BroadVision's marketing literature. Without admitting guilt, Art agreed to settle out of court by paying $15 million in order to continue marketing Dynamo without facing further court battles.

Cabletron gets $200M infusion

Cabletron last week announced that technology investment firm Silver Lake Partners will invest up to $200 million in the firm and its four newly launched subsidiary companies. As part of the investment, Silver Lake will purchase a 3% stake in each of the new companies. The investments are intended to fuel the expansion of these new companies. David Roux, a principal of Silver Lake, will join Cabletron's board of directors.

Novell targets Windows 2000

Novell is set to release new software for managing Microsoft's Windows 2000 Active Directory this week. Called eDirectory for Windows 2000, the software lets users manage Active Directory domains from within Novell Directory Services (NDS). The software, which natively supports the Lightweight Directory Access Protocol, no longer requires a NetWare server. It will also run on mixed Windows NT, 2000 and NetWare networks. Network managers with previously purchased NDS eDirectory, NDS Corporate Edition or NetWare 5.x can download eDirectory for Windows 2000 for free from www.novell.com/download. Any user who purchases Windows 2000 by May 17 can obtain a 100-user version for free.

Gates as Rockefeller?

Microsoft last week reaffirmed its position that it did not break antitrust laws, while the government said it was "impossible to imagine" that Microsoft was without blame. The statements were part of closing arguments in the government's antitrust case against the software developer. No timetable has been set for a decision from Judge Thomas Penfield Jackson, who, during closing arguments, compared Microsoft's power over operating systems with the power John D. Rockefeller once had over oil. In 1911, Standard Oil was broken up into separate companies, a remedy the government is reportedly considering for Microsoft.

Judge Jackson likens Microsoft's clout to Rockefeller.

GM, Ford rethink B2B exchange

General Motors and Ford last week abandoned their efforts to create competing online business-to-business trade exchanges for their suppliers. Instead, GM and Ford announced an as-yet-unnamed joint venture to develop a shared online exchange for the car industry. DaimlerChrysler will also join the exchange. GM and Ford admitted they made the strategy shift because suppliers had been dissatisfied with the idea of having to join multiple online trading exchanges.

ASP Agillion off and running

Application service provider (ASP) startup Agillion officially launched the company's first services last week. Former Tivoli executive Frank Moss and BSG Systems founder Steve Papermaster lead the ASP. Agillion is offering small and midsize businesses a software rental service accessed through Agillion's e-Business Dashboard Web site. Users only need a standard Web browser as opposed to specific client software or a terminal server client. Agillion services are free until the end of June, after which the fee is $30 per month per user.

Ford steps on global Web marketing gas

GM, Nissan and others making e-comm moves.

BY ELLEN MESSMER

DEARBORN, MICH. — Ford Motor Co. last week aired plans to get its 5,000 car dealers on the same e-commerce page.

The broad cooperative Web marketing effort will include designing Web sites for individual dealers that have a common look and feel, and enabling the dealers to offer a similar set of online services, from insurance policies to car sales. To do this, Ford is taking the unusual step of setting up an as-yet-unnamed joint venture with Trilogy Software, which helped design the current Ford.com site.

[Left to right] Joe Liemandt, president of Trilogy Software; Brian Kelley, president of Ford's ConsumerConnect e-commerce division; and Trilogy Software founder and CEO Chris Porch get together on an as-yet-unnamed joint venture to develop Web sites for individual dealers.

With Trilogy's founder and CEO Chris Porch in charge, this new Austin, Texas-based venture is expected next month to begin providing Web design services to Ford, its dealers and perhaps other clientele. Ford isn't disclosing its investment in the joint venture, but not surprisingly, the company hinted the undertaking could go public in the future.

"We want to make sure our dealers have the tools to get leads and make sales on the Internet," said Brian Kelley, president of Ford's ConsumerConnect e-commerce division. While Ford's Web site BuyerConnection.com directs potential buyers to local dealers, the site doesn't support the same type of e-mail negotiation available at rival General Motors' GMBuyPower.com site. That site is where 80% of GM's 7,700 dealers now list their inventories, get customer e-mail and check visitor Web statistics on what cars get the most page views.

The larger issue is how far the big car manufacturers will go to get dealers to support a corporate Web brand. Today, GM dealers have free reign in building Web sites. However, not unlike Ford, GM and its e-Dealers Advisory Council are considering whether to adopt a common look and feel for local dealers, a GM spokeswoman says.

Another competitor, DaimlerChrysler, has a Web site to generate leads to about 40% of Chrysler's 4,000 dealers on Chrysler car models, but so far the company lacks a unified global Web strategy to reflect its merger with Daimler-Benz.

Ford's upcoming Web makeover might also lead to new pricing mechanisms. "We are looking at invoice pricing

See **Ford**, page 126

Novell.

DIRECTORY ENABLED

IBM

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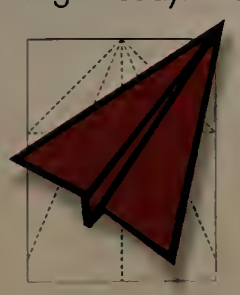

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F5 adds oomph to Web caching family

Company boosts performance of flagship box, adds new CMP saving device and mother board.

BY APRIL JACOBS

F5 Networks stirred up the caching arena last week with a new device and hardware aimed at helping users more efficiently manage Internet traffic.

F5, known for its cache devices used to manage Internet traffic, announced Version 3.0 of its BIG/ip Controller cache device, as well as plans for a stand-alone device that off-loads processor-intensive encryption and identification functions from Web servers.

A third product in the works is motherboard-based technology that performs cache functions on a board that can slide into a server or switch.

Such integrated products can ultimately mean fewer devices for network managers to troubleshoot and maintain, and better response time to end-user requests, observers say.

BIG/ip 3.0 has several new features, including one dubbed Active-Active mode that lets two BIG/ip caches work together to handle larger volumes of traffic and back each other up in the event that one fails.

The devices can also route requests based on HTTP header information, allowing network managers to dedicate servers for specific requests. For example, in an e-commerce setting, HTTP-based routing can allow premium users to get the best response time possible.

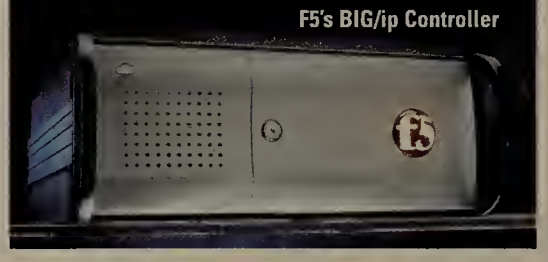
F5 also promised to release a new motherboard this year that can be resold by server and switch vendors such as Hewlett-Packard, 3Com and Cabletron. That motherboard would support the same features as the BIG/ip cache device.

BIG/ip – the next generation

Performance upgrades for F5's flagship cache device will include:

- New network processor-based architecture integrated into existing BIG/ip appliances.
- A new design that offloads repetitive packet processing from the CPU, freeing the CPU to concentrate on availability testing and decision making.
- A feature that allows cryptographic and traffic-management functions to be offloaded from the server.

F5's BIG/ip Controller



Esmerelda Silva, an analyst with International Data Corp., a market research firm in Framingham, Mass., says putting cache features onto a motherboard reduces network complexity by incorporating what used to be a stand-alone device into a server or switch. Competitors have already adopted similar technology.

Cisco, for example, has plans to incorporate its LocalDirector traffic management software into its line of Catalyst switches in March. The integrated switch will allow network managers to deal with a single device instead of separate hardware and software.

In June, F5 will also be rolling out add-on cards with processors designed to off-load CPU-intensive functions such as security and cookies from the Web server. The cards can be put into a PCI slot.

In April, F5 will make available a stand-alone version of that device, now dubbed the e-commerce gateway, that is positioned between the router and the Web server. Intel announced a similar product two weeks ago within its NetStructure family, called the e-Commerce Accelerator 7110.

F5: www.f5.com

Denial-of-service attack code infects Windows

James Madison University and others find Trojan horse infection on Windows PCs.

BY JAMES NICCOLAI AND ELLEN MESSMER

The code used in the recent denial-of-service attacks on Yahoo, eBay and other victims was Unix-based, but new Windows-based variants of denial-of-service attack tools are now being identified.

James Madison University discovered last week that 16 Windows PCs on its student network were infected with what looked like a Windows variant of the original Unix-based "Trin00," a Trojan horse that hackers secretly install on machines to remotely launch denial-of-service attacks.

James Madison's network administrator Gary Flynn reported the discovery to the public service Computer Emergency Response Team (CERT). The new Trin00 variant is dubbed Wintrin00. Flynn acknowledged that the university's 16 machines were being remotely manipulated by an unknown attacker to send out a User Datagram Protocol (UDP) flood against unspecified victims on the Internet.

> ***"On the Windows side, this has the potential to be much more disastrous."***
>
> Randy Marchany, CERT team member, Virginia Tech University

Meanwhile, a university in Florida and a large corporation in Washington, D.C., this week also discovered Windows PCs that had been infected by a Trin00 variant, Stephen Northcutt, director of the Global Incident Analysis Center at the System Administration, Networking and Security (SANS) Institute, said in a phone interview.

Windows-based denial-of-service attack code appear to be far less deadly in terms of fire-power compared to the earlier Unix versions, say experts at Internet Security Systems after an initial review of the Windows-based attack code last week.

However, because there are so many Windows machines in use, many are concerned the potential for launching attacks with them is great.

"On the Windows side, this has the potential to be much more disastrous," says Randy Marchany, a member of CERT at Virginia Tech University.

Aside from the sheer number of Windows PCs connected to the Internet, many Windows PCs are operated by novice users, and are not protected by firewalls and other heavy-duty security software.

Detection difficult

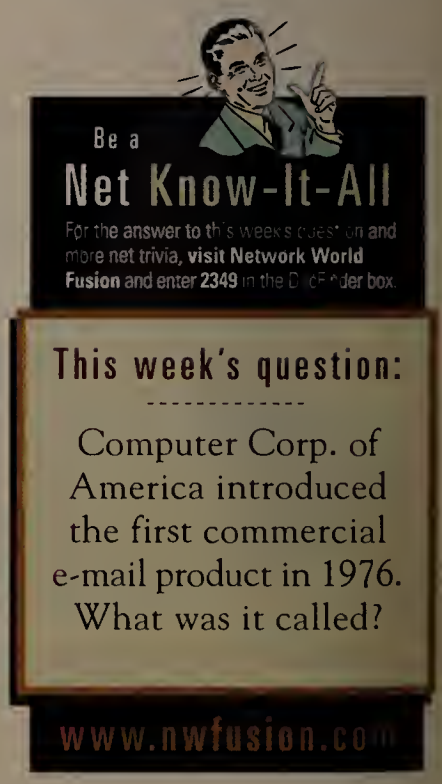
Making the problem harder to solve is the fact that most users wouldn't even be aware that their PC has been affected. Trojan horses such as Trin00 don't typically cause problems on the computers they infect; rather, they allow the computer to be used in a coordinated attack against the powerful servers that run Web sites or corporate intranets.

The best way for individual users to protect their PCs is to keep their antivirus software up-to-date and avoid opening attachments that come from unfamiliar sources. Ideally, users should always scan attachments for viruses before opening them, experts say.

"Those innocent screen savers, pictures and games that we once downloaded with abandon have much more ability to play havoc today," James Madison University said on its Web site.

For businesses and organiza-

See **Attack code**, page 124



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Bells are bulking up on e-commerce services

SBC pays $3.9 billion for Sterling Commerce; online marketplace competition heats up.

BY TIM GREENE

When it comes to e-business, local phone companies are rushing to set up online marketplaces for corporate customers who don't have the time, resources or inclination to learn the technology and set them up for themselves.

And none seems more committed to that e-commerce concept than SBC Communications, which offered $3.9 billion last week to buy e-business software maker Sterling Commerce. The deal will go a long way toward letting SBC tap the estimated $200 billion business-to-business e-commerce market.

SBC sees the Sterling purchase as a way to get a jump on competitors by acquiring products, services and the personnel to deliver new services all at once. The deal also brings in a customer base that Sterling says includes 487 Fortune 500 companies.

"This plants a stake in the ground. It will definitely raise the level of competition and marks a maturation of the e-commerce market," says Jilani Zeribi, an analyst with Current Analysis, a network market consultancy in Sterling, Va.

Other regional Bell operating companies are interested in providing similar services, at perhaps a lower level. Bell Atlantic, BellSouth and US West have made partnerships to cobble together e-commerce services, but they have done nothing as bold as the SBC-Sterling venture (see graphic).

For example, BellSouth and Commerce One last fall announced they would develop an electronic marketplace where businesses could band together to buy equipment. For example, several businesses could come together to seek bids on desktop PCs expecting to get a better price because they are buying larger volumes.

That service is scheduled to be up and running the spring, and by year-end, BellSouth will let customers sell their own goods and services, the company says.

The Commerce One alliance lets BellSouth expand the services it offers without a huge investment and without losing focus on its main business — selling communications lines. "Unlike what SBC did, we will stick with what our core competencies are," says Pat Shannon, president of BellSouth Exchange Services.

Company focus may be an issue with the SBC/Sterling deal because when pressed at a teleconference announcing the deal, SBC officials could not say exactly how they would integrate the two companies' offerings.

Zeribi says that process could take a while to sort out because Sterling's blue-chip customers will expect the quality of the service they buy to stay high. SBC will have to be careful not to overload Sterling's staff with too many new customers at first.

Even so, Sterling will bring in $561 million this year if it equals last year's sales. "SBC can afford to hold that market share until they figure out what to do with it," Zeribi says.

Beyond selling e-commerce services, RBOCs will have the chance to use those services to their own advantage under a program being pushed by BellSouth.

Last week BellSouth and Commerce One proposed setting up an electronic marketplace where other major carriers and their equipment suppliers could buy, sell, bid and auction equipment. As of press time, no one else had signed on.

BellSouth apparently believes that such a marketplace can save money: It has budgeted $1 billion in savings from such a venture. ◩

RBOCs have their eyes on e-commerce services

RBOCs are wheeling out more than just the network connections needed to do business on the Internet.

Company: E-commerce plans

SBC Communications: Bought Sterling Commerce for $3.9 billion and expects to use Sterling's software to offer integrated e-business software and network services.

US West's Dex division: Allies with Intershop and Nextron to provide Web site creation and hosted e-commerce sites.

Bell Atlantic: Plans to work with Biztro, Inc. to set up a business-to-business marketplace where customers can trade.

BellSouth: Teams with Commerce One to run Internet-based marketplaces where customers can auction and bid on products.

Net monitoring service on tap from SilverBack

BY MARC SONGINI

ANAHEIM, CALIF. — SilverBack Technologies wants to take on much of the headache of monitoring your company's network resources.

The North Billerica, Mass., start-up plans to roll out a monitoring and reporting service called InfoCare, which features a customer-site appliance dubbed InfoNest 650. The service is designed for networks of less than 1,000 seats. The offering will let IT staff get an instant picture of their network devices, servers, applications and security, the company says.

SilverBack is one of a handful of players in the fledgling management service provider (MSP) market, joining the likes of @Manage, InteQ and NetSolve. The MSPs claim their customers can save on software deployment costs, personnel and training.

SilverBack claims to have the broadest set of MSP services, covering the e-business, security and applications portions of the network. Moreover, this a service with a new wrinkle: It is offered on the customer site, removing fear of any failure in the pipeline between it and the MSP host. There are, however, live connections between the user and the SilverBack data center for periodic application upgrades and maintenance.

SilverBack is expected to offer details of its new InfoCare service this week at the ASP Forum in Anaheim. The offering handles a variety of functions — performance monitoring, asset inventory, discovery of downed devices, problem analysis and security scanning. The service is delivered through a special appliance, called the InfoNest 650. This box contains a version of the Linux operating system running on an Intel chip, and it hosts the independent software vendor applications that monitor and present the network statistics. For instance, Network Associates provides the security piece of InfoCare with its Cybercop security product.

One beta user gives the service a thumb's up.

"InfoCare has performed exceptionally well so far," says Cyndi Fernandez of Chelmsford On-Line, an ISP in North Chelmsford, Mass. While the company already has another monitoring system in place, Fernandez says InfoCare seems to discover problems more quickly. She especially likes InfoCare's historical trend reports that can pinpoint network bottlenecks and other problems.

InfoNest attaches to any part of the network via a 100M bit/sec Ethernet port. Once in operation, it begins to poll the network via SNMP commands and starts generating status reports.

InfoNest checks a network device, such as a printer, hub, switch or router, and learns things such as its IP address and port availability. This data is presented to the IT manager via the SilverBack Web-based customizable InfoPortal, which resides in the InfoNest device. The InfoPortal can be accessed via any browser. The InfoPortal can also alert IT managers about outages in the network via a page or an e-mail.

InfoCare will be available this spring for $2,000 to $4,000 a month, depending on network size.

Silverback: www.silverbacktech.com.

PROFILE: SILVERBACK TECHNOLOGIES

START-UP COMPANY

Headquarters:	North Billerica, Mass.
Founded:	June 1999
Product:	Network monitoring service
Employees:	45
Funding:	Privately financed with $6.8 million in capital.
Fun fact:	Company is named after the silverback, the informal name given to the oldest, wisest and most loyal gorilla in a group.

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Active Directory 'forests' may cause pain

Network managers advised to plan their new directory infrastructures with care.

BY JOHN FONTANA

REDMOND, WASH. — Network executives who don't build their Active Directory infrastructures as a single "forest" may face the onerous chore of manually configuring management and security controls much like they must do today to link Windows NT domains.

Corporations that rush into Active Directory, the key management technology in Windows 2000, could find themselves with multiple directory forests — something Microsoft advises against. Forests are directory structures that include "trees," which in turn consist of domains containing users, groups and resources such as printers.

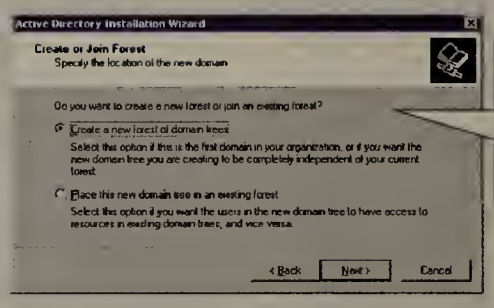
The forest concept is intended to simplify both end-user access to the directory and management of multiple domains. Under this structure, all domains and trees in a forest inherently trust one another for the purpose of authentication, which is based on Kerberos security. Such trust is not extended between forests, which means directory administrators must use NT LAN Manager (NTLM) to manually configure one-way trusts between forests. NTLM is the much maligned security model in NT 4.0.

"If you want to live in hell right away, go to multiple forests," says Dave Gasiewicz, lead architect of Microsoft's internal IT department. "Administratively, it opens up boondoggles. The security model is very complex."

See **Forests**, page 124

Directory setup

Administrators upgrading to Windows 2000/Active Directory will see this dialog box if they choose to make the server to which they are upgrading a separate tree in their directory infrastructure. Choosing the option to create a new forest will send enterprises down a difficult administrative road that can be hard to back out from.



Issues created by multiple forests:

- No transitive trust between forests.
- Loss of centralized administration; each forest must be managed individually.
- Multiple IDs for users in multiple forests.
- Must hard wire one way trusts to eliminate multiple IDs.

Newbridge sells out after years of missed chances

BY TIM GREENE

PARIS — After 14 years of failing to break into the big three of U.S. networking vendors, Newbridge Networks threw in the towel last week and agreed to a $7.1 billion buyout by European network giant Alcatel.

Alcatel says the deal puts it in position to displace Cisco, Nortel Networks or Lucent as one of the top three network equipment vendors in the U.S., although that's a claim analysts dispute.

Newbridge's most recent new product, the 450G bit/sec Newbridge 670 Routing Switch, does give Alcatel a desperately needed, high-speed core carrier offering that Alcatel had failed to produce by itself.

Another plus for Alcatel is Newbridge's European customers, which are complementary to Alcatel's, says Steve Byars, principal analyst with Current Analysis, a network consultancy in Sterling, Va.

However, that is not enough to make Alcatel a threat to Cisco, Nortel or Lucent, Byars says. "This acquisition alone will not get them there," he says.

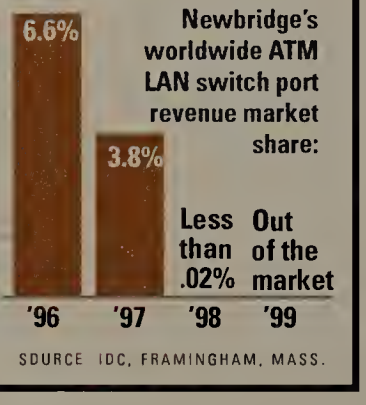
But the sale definitely brings to a close Newbridge's long tenure nibbling at the edges of the U.S. carrier network market. Once a strong contender for dominance, selling T-1 multiplexers and intelligent channel banks to the regional Bell operating companies, Newbridge lost its edge with the advent of frame relay and ATM.

While Newbridge remains a significant name, it missed opportunities to crack the upper echelon in the U.S. The company started in 1986 with a wealth of promise, making T-1 muxes and intelligent channel banks. By 1989, it rose to be a distant No. 3 in the end-user T-1 mux market, with 7% of sales worldwide, according to Vertical Systems Group, a technology market research firm in Dedham, Mass.

Newbridge got a foothold in RBOC networks selling muxes and intelligent T-1 channel banks, but the company failed to hold on to RBOCs as customers for its frame relay switches.

Going, going, gone

Newbridge Networks, once a major provider of enterprise network gear, saw its toehold in the LAN switching market evaporate over the past few years.



SOURCE IDC, FRAMINGHAM, MASS.

Newbridge won contracts to sell the Newbridge 36120 frame relay switch to RBOCs. But because of initial troubles with the product, consumers quickly turned to Cascade Communications gear that had a lower price per port.

"Newbridge really shipped the 36120 before they should have," recalls Rosemary Cochran, an analyst with Vertical.

With the coming of ATM, Newbridge launched a carrier ATM switch, the 36170, as well as an entire line of LAN ATM switches called Vivid. After years of pumping money into Vivid, the line never took off, much like ATM in the LAN itself. You can't even find a mention of Vivid on Newbridge's Web site today.

Newbridge did well overseas, however, selling 36170s to PTTs and other foreign service providers. Vertical ranked Newbridge No. 1 in ATM sales to carriers worldwide in 1996. Recently, RBOC SBC Communications chose the 36170 as part of a $6 billion network upgrade. ◪

Correction

In a news story (*NW*, Feb. 21, page 14), the company introducing new data warehouse software was misidentified. The company is SAP.

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01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
10. ☐ Education
11. ☐ Government
12. ☐ Military
13. ☐ Aerospace
14. ☐ Consulting (Independent) *
15. ☐ Carriers/Service Providers
16. ☐ Internet Service Provider (ISP)
17. ☐ Manufacturing (Computer/ Communications/OEM)
18. ☐ Resellers of Computer/Network Products (VARs,VADs)*
19. ☐ Systems/Network Integrators*
20. ☐ Distributors (Computer/ Communications)*
21. ☐ Other (please specify) _____

*Attn Consultants, Inlegrators, Distribulors, Resellers: Please complete entire form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only) S: What is your secondary job function? (check ALL that apply)

P	S		P	S		P	S	
☐	☐	1. Network Management	☐	☐	5. Internet/Intranet/E-Commerce Mgmt, Webmaster	☐	☐	7. Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
☐	☐	2. LAN Management	☐	☐	6. Engineering Management	☐	☐	8. Consultant (Independenl)
☐	☐	3. Datacom/Telecom Management				☐	☐	9. Other (please specify) _____
☐	☐	4. IS/IT/MIS/CIO/CTO/Systems Management						

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/ Workstations/PDAs)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet
J ____ Extranet/E-Commerce
K ____ Remote Access
L ____ Peripherals *(including storage)*
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence? (check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization? (check ONE box in each column)

SERVERS			CLIENTS			LANS		
At Location		Entire Org.	At Location		Entire Org.	At Location		Entire Org.
A		B	C		D	E		F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CORPORATE:
1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization? (check ONE in each section)

A. At your location:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

B. Entire organization:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A	B		A	B		A	B	
☐	☐	01. VPN Equipment	☐	☐	07. Voice/Video Over IP (IP Multicast Routing)	☐	☐	12. Management/Monitoring Software
☐	☐	02. VPN Services				☐	☐	13. Web Based Management Tools
☐	☐	03. Firewalls/Security/Encryption	☐	☐	08. Internet Services	☐	☐	14. Web Based Collaboration/ Groupware
☐	☐	04. Electronic Commerce	☐	☐	09. Web Hosting			
☐	☐	05. Web Servers/Software	☐	☐	10. Host Access	☐	☐	15. Caching/Load Balancing Products
☐	☐	06. Web Enabled Call Center Tools	☐	☐	11. Web Development Tools	☐	☐	16. Other Internet/Intranet

LOCAL-AREA NETWORKS/INTERNETWORKING

A	B		A	B		A	B	
☐	☐	17. Local-Area Networks	☐	☐	25. Layer 2 Switches	☐	☐	33. UPS
☐	☐	18. Network Operating System Software (NOS)	☐	☐	26. Layer 3 Switches	☐	☐	34. Network Interface Cards (NICs, PCMCIA)
			☐	☐	27. Layer 4 Switches			
☐	☐	19. Intel Based Servers	☐	☐	28. ATM Switches	☐	☐	35. Hubs/Intelligent Hubs/ Stackable Hubs
☐	☐	20. Intel Based Multiprocessor Servers	☐	☐	29. Token-Ring Switches			
☐	☐	21. RISC Based Servers	☐	☐	30. Network Storage (NAS, SANs)	☐	☐	36. Cables,Connectors, Baluns
☐	☐	22. Clustered Servers	☐	☐	31. Storage/Backup (Optical, Disk, Tape, RAID)	☐	☐	37. SNMP Platform
☐	☐	23. Print Servers				☐	☐	38. Management Frameworks
☐	☐	24. Routers	☐	☐	32. Network Test/Diagnostic Tools	☐	☐	39. Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A	B		A	B		A	B	
☐	☐	40. Modems	☐	☐	46. Remote Access Services	☐	☐	53. PBXs
☐	☐	41. Cable Modems	☐	☐	47. Wireless Data Equipment/Services	☐	☐	54. Videoconferencing
☐	☐	42. Asynchronous Transfer Mode (ATM)	☐	☐	48. ISDN Equipment/Services	☐	☐	55. Managed LAN/Router Services
☐	☐	43. Frame Relay Equipment Including FRAD5	☐	☐	49. FT-1/T-1/T-3 Services	☐	☐	56. Fax Servers/Services
			☐	☐	50. xDSL Services/Products	☐	☐	57. Other WAN Equipment/Services
☐	☐	44. Frame Relay Services	☐	☐	51. Diagnostic/Test Equipment			
☐	☐	45. Remote Access Products	☐	☐	52. DSU/CSU			A B
						None of the above (1 – 57)		☐ ☐ 58.

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

COMPUTERS/PERIPHERALS

A	B		A	B		A	B	
☐	☐	01. Laptops/Notebooks/PDAs	☐	☐	05. Storage/Backup (Optical,Disk,Tape,RAID)	☐	☐	08. Minis
☐	☐	02. PCs				☐	☐	09. Mainframes
☐	☐	03. Windows Terminals/Thin Clients	☐	☐	06. Printers	☐	☐	10. Fax/Modem Boards
☐	☐	04. Workstations	☐	☐	07. Printer/Fax/Copier Hybrids (Multifunction Printers)	☐	☐	11. Memory/Chips/Boards/Cards
						☐	☐	12. Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A	B		A	B		A	B	
☐	☐	13. Network Management	☐	☐	21. E-Mail	☐	☐	28. Site Metering Tools
☐	☐	14. Systems Management	☐	☐	22. Enterprise Resource Planning (ERP)	☐	☐	29. Data Warehousing
☐	☐	15. Security				☐	☐	30. Anti Virus Software
☐	☐	16. Directory Services	☐	☐	23. EDI	☐	☐	31. Multimedia
☐	☐	17. Operating Systems	☐	☐	24. Desktop Videoconferencing	☐	☐	32. Y2K Conversion Software
☐	☐	18. Applications Development Tools	☐	☐	25. Imaging	☐	☐	33. Helpdesk
☐	☐	19. Database Management/RDBMS	☐	☐	26. Middleware/Serverware	☐	☐	34. Other Software/Applications
☐	☐	20. Groupware	☐	☐	27. Document Management			

SERVICES

A	B		A	B		A	B	
☐	☐	35. BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics, etc.)	☐	☐	36. Applications Outsourcing	☐	☐	39. Education/Training Services
			☐	☐	37. Call Center Outsourcing	☐	☐	40. Other Services
			☐	☐	38. Systems Integration/Consulting			A B
						None of the above (1 – 40)		☐ ☐ 41.

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A	B		A	B		A	B	
☐	☐	01. TCP/IP	☐	☐	04. Novell IPX/SPX	☐	☐	07. NFS
☐	☐	02. IPv6	☐	☐	05. APPC/APPN/LU 6.2	☐	☐	08. SNMP
☐	☐	03. SNA	☐	☐	06. NETBIOS/NETBUEI	☐	☐	09. Other Network Protocols

LAN/WAN ENVIRONMENT

A	B		A	B		A	B	
☐	☐	10. Gigabit Ethernet	☐	☐	16. IP Switching	☐	☐	22. Wireless
☐	☐	11. Switched Ethernet	☐	☐	17. Layer 3,4 Switching	☐	☐	23. DSL
☐	☐	12. Fast Ethernet	☐	☐	18. FDDI	☐	☐	24. ISDN
☐	☐	13. Ethernet	☐	☐	19. 100Base-T	☐	☐	25. Frame Relay
☐	☐	14. ATM	☐	☐	20. 10Base-T	☐	☐	26. Private Line T1, T3, FT-1, SONET
☐	☐	15. Token Ring/Token Ring Switching	☐	☐	21. Fibre Channel	☐	☐	27. Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	28. Windows NT/Windows 2000	☐	☐	32. LINUX	☐	☐	35. IBM (LAN Server)
☐	☐	29. Novell (NetWare 5.X)	☐	☐	33. Microsoft (LAN Manager)	☐	☐	36. Other Network Operating System
☐	☐	30. Novell (NetWare 4.X)	☐	☐	34. Banyan (Vines)			
☐	☐	31. Novell (NetWare 2.X,3.X)						

COMPUTER OPERATING SYSTEM

A	B		A	B		A	B	
☐	☐	37. NT Workstation	☐	☐	42. LINUX	☐	☐	47. Digital VMS
☐	☐	38. Windows 2000	☐	☐	43. DOS	☐	☐	48. Macintosh
☐	☐	39. Windows 98/95/3.1	☐	☐	44. OS/2,OS/2 WARP	☐	☐	49. Other Computer Operating System
☐	☐	40. Intel based UNIX	☐	☐	45. OS/400			A B
☐	☐	41. RISC based UNIX (incl. SOLARIS)	☐	☐	46. IBM MVS/VM/VSE/ESA	None of the above (1– 49)		☐ ☐ 50.

11. Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale)
1. ☐ IBM
2. ☐ Other

B - Minis (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - Workstations
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12. What is the estimated gross revenue of your entire company/institution? (check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or less
10. ☐ None of the above

13. For which areas outside of the US do you have purchase influence? (check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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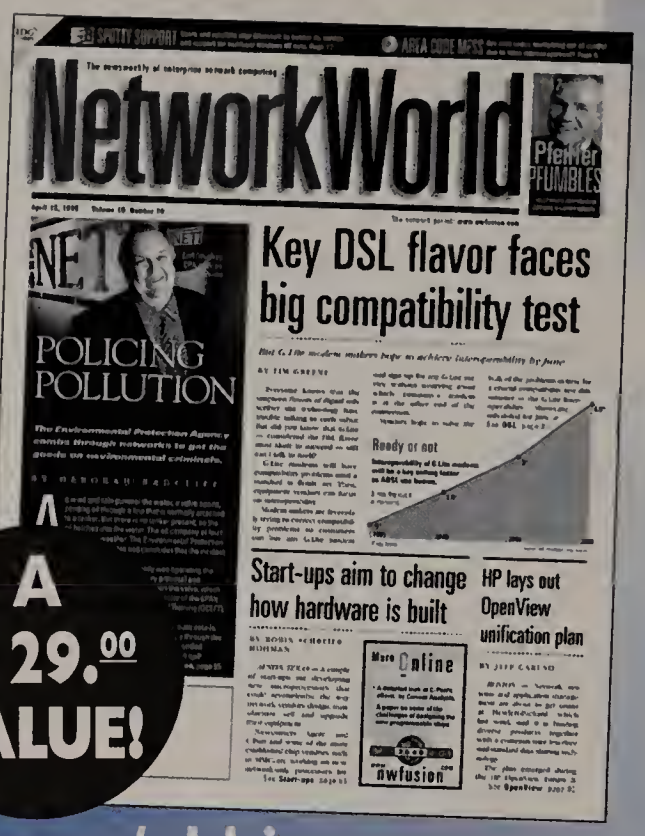

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Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

Nokia last week announced a new Unix version of its wireless application protocol (WAP) server software, which will let thousands, rather than hundreds, of users simultaneously access corporate data via wireless devices.

Aimed at major corporations and ISPs offering mobile services, Nokia's Unix-based WAP Server Version 1.1 will feature improved performance and scalability, allowing for a larger number of users to access e-mail or other applications residing on corporate networks via mobile devices.

The new version includes a feature for automating access to corporate data and enhanced security with an integrated security pack.

The pack adds Secure Sockets Layer for accessing servers over the Internet on top of the software's original wireless transport layer security feature.

Pricing for WAP Server 1.1, which is expected to ship in the second quarter, was not available.

Nokia: www.nokia.com

Xerox last week said it would soon launch software that will let mobile users send documents via fax or e-mail from cellular phones, handheld computers or pagers.

The software, called MobileDoc, will initially support Motorola's PageWriter 2000X and TimePort P930 interactive devices, and Nokia wireless phones. The product is expected to be available in March.

A server license, which includes 25 clients, will cost $25,000. Additional client licenses may be added for $100 to $200 per seat.

Xerox: www.xerox.com

Red Hat program targets corporate customers

BY APRIL JACOBS

Red Hat has upped the ante in a bid to win the confidence of corporate IT departments with a multivendor partnership program that combines key business applications optimized for Linux and comprehensive support services.

The company last week announced the Enterprise Edition Program and the first three members of the partnership: Oracle, Computer Associates and RealNetworks. As part of the offering, Red Hat is also committing to support selected applications from those companies.

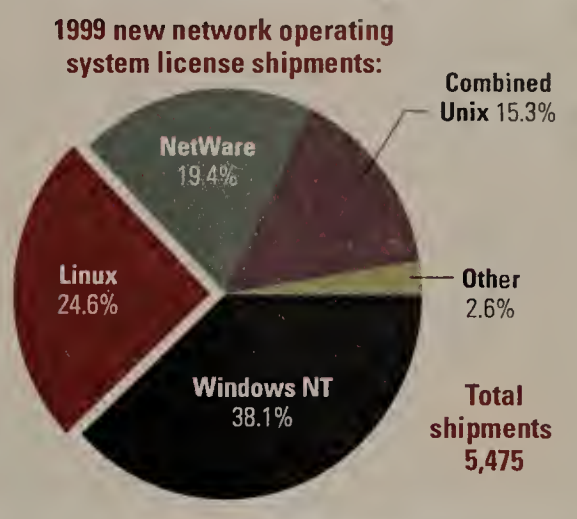
Applications supported will include the Oracle8i database server, Computer Associates' Unicenter TNG family and RealNetworks' RealSystem G2 software family.

For customers, the Enterprise Edition Program means they can call Red Hat if problems arise running the

See **Red Hat**, page 26

Red Hat Software: Linux's ambassador to the enterprise

While Linux was second in server operating system shipments last year, Red Hat is looking to further promote the operating system by forming partnerships with leading enterprise application vendors.



NetWolves device keeps hackers at bay

BY TIM GREENE

MELVILLE, N.Y. — NetWolves last week announced a network firewall appliance that has more features than a Swiss Army knife.

For about the same price as a software firewall, NetWolves' FoxBox also includes a Web server, file server, caching server and Dynamic Host Configuration Protocol server, among other things.

"This would be great for smaller companies and sites that want to limit the amount of gear they have in their network," says Alan Stewart, president of Network Interface, a consultancy in Crystal Lake, Ill.

The NetWolves FoxBox includes Web, file and caching server features.

At the same time, the device can be a problem because if it crashes, the enterprise loses multiple communications capabilities, he says.

FoxBox sits on the LAN side of a WAN router to act as a firewall for devices on the LAN but also comes with WAN interfaces so it can connect directly to the 'Net and protect a customer's entire network.

FoxBox ranges in price from $3,100 to $7,100, making it less expensive than some stand-alone firewalls, users say. Other multiple-function appliances, such as those made by NetScreen and RapidStream, focus on speeding the packet processing needed to establish secure virtual private networks (VPN).

NetWolves seems to be going more for breadth of functions, and FoxBox is inexpensive enough that customers could buy it and use just one of its features.

For example, the Wall Township, N.J., schools replaced a CyberGuard software firewall with FoxBox to protect their network, says Jeff Janover, director of technology for the school district. The CyberGuard firewall was running on an NT server that crashed every six to eight weeks for a year and a half, he says.

Replacing it with FoxBox cost about $3,500, which is less than the $5,000 to $8,000 it would cost to buy other vendors' firewall software and a server, Janover says.

At that price, Tanagraphics, a New York printing company, was able to buy two FoxBoxes to protect its network. One is active and the other is on standby in case of a failure, says Doug Bressler, Tanagraphics' network director.

FoxBox connects LANs to the 'Net over dial-up connections or 56K bit/sec or T-1 dedicated lines. It also supports external digital subscriber line and cable modems.

The gear can also create Internet VPNs with other FoxBoxes. So a company with multiple sites could install FoxBox at each location to set up a VPN. The equipment supports IP Security tunneling that secures data across the Internet. FoxBox uses Data Encryption Standard to protect the data, but not Triple-DES, a much more secure encryption algorithm.

Bressler says Tanagraphics uses the FoxBox firewall as well as its Domain Name System server to direct traffic sent to an external IP address to the correct internal IP address. That capability let Tanagraphics return its Class C IP addresses to its ISP, Bressler says.

Tanagraphics initially considered installing its own firewall after trying a managed firewall service, but rejected it. Whenever the company wanted to give another employee access rights to the Internet, it took too long to get the ISP to open a new hole in the firewall, he says.

Tanagraphics also uses FoxBox as its mail relay host, but not as its mail server. But knowing FoxBox has e-mail capabilities gives the firm a backup option if its primary e-mail server fails, Bressler says.

The box is based on PC hardware, which Bressler sees as a drawback. "That means it's hardware with moving parts, and moving parts wear out," he says. But he says he is not worried because he has a preconfigured spare on hand.

NetWolves says its equipment is meant for offices with up to 500 LAN users who want to connect to the Internet. FoxBox comes in five models, with the major difference being the WAN interface. WAN options include 56K bit/sec modem, ISDN, 56K bit/sec dedicated and T-1. Dedicated lines require an external DSU/CSU. One model comes with dual Ethernet ports, one to connect to the LAN and the other to connect with an external cable modem or DSL modem.

NetWolves: www.netwolves.com

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Users give Cabletron split a cautious thumbs up

BY JIM DUFFY

ROCHESTER, N.H. — Cabletron customers are generally upbeat about the company's plans to split up, noting that new products and technologies may now come to market sooner.

A few weeks ago, Cabletron announced that it will divide into four smaller companies that will be able to more effectively compete in a rapidly changing market and reignite investor interest in the firm. The plan was the culmination of an 8-month-long restructuring following the resignation of CEO and founder Craig Benson (*NW*, Feb. 14, page 1).

The new companies will be called Riverstone, Enterasys, Global Network Technology Services and Aprisma. Riverstone will focus on the service provider market. Enterasys will target large enterprises installing e-commerce networks. Global Network Services will address professional services. And Aprisma will provide network management software for service providers and enterprises.

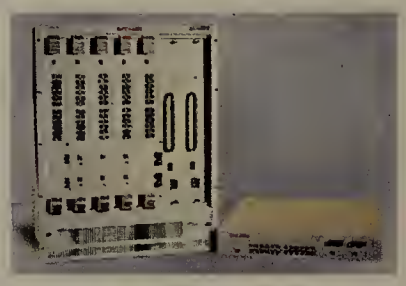
Cabletron will function as a holding company for the four companies until they are taken public or sold. Cabletron will strive to maintain the Cabletron name and brand, but company officials say the name may also be retired.

"I think it will be good for them," says Brandon Ross, director of network engineering for MindSpring Enterprises in Atlanta. "They'll be able to focus on the individual areas of the market that each of the four separate companies target with little distractions."

"[The breakup] will cut out some of the bureaucracy and make it so that the companies can be more aggressive in their market, be quicker to develop new products and get them out the door," says Ken Sorenson, director of networks and systems at Butler University in Indianapolis. "It kind of gets them into position to be able to react as the markets change, which they haven't done in the past."

Sorenson uses Cabletron's SmartSwitches and SmartSwitch Routers. It's unclear which company will assume development of these products — Enterasys, Riverstone or both — but Sorenson is confident that cross-licensing agreements between the new companies will keep the technology relevant for his use.

Even so, there is still caution and concern among certain Cabletron users. Some fear being lost in the shuffle; others wonder whether the divided Cabletron will be as strong as the whole.



Cabletron's SmartSwitch family remains the company's network workhorse.

Mixed feelings

"Always with these things you get mixed feelings," says Steve Dougherty, director of Internet operations at EarthLink in Pasadena, Calif. "There's the issue of critical mass and making sure the right players get into the right organizations. There's always the minor issues of disruptions while reorganizations occur. Everyone is well-intentioned, but obviously everything is up in the air."

Still, Dougherty says he believes the plan should make Cabletron more efficient and less bureaucratic.

Craig Timmons, director of university computing at the University of Charleston in West Virginia, agrees that the split could make Cabletron "light-footed." But he also hopes the Cabletron companies can maintain the same level of support.

"I've always gotten good service from them and good response from them, and if that continues, I don't see it as a bad thing," Timmons says. "There's always the uncertainty of how that's going to pan out, but I think it's definitely a thing to take a look at and see how it comes out."

Analysts are adopting a wait-and-see attitude toward the divestiture. Current Analysis, for example, says the split is a necessary initial step for Cabletron to compete in next-generation markets, but the company has to say and do more.

"Unless this is the first of a series of new competitive strategies and decisive actions, we do not think the divestiture will be successful and may in fact do more harm than good," wrote analysts Fred McClimans and Tere Bracco in a report released two weeks ago. "More than a repackaging, Cabletron needs a new direction. Cabletron should have announced a move into a truly burgeoning market, perhaps with an acquisition of an optical company or a major initiative in converged services product development. We question their motives for choosing a reorganization rather than a rebirth."

Such skepticism cannot dampen the spirits of users though, who tend to like things the way they are.

"As far as I can tell, I don't see anything that's going to change," says Butler's Sorenson. "I don't foresee any major problems. I guess from my standpoint it's a plus." ◪

IronBridge hammers out high-speed network gear

Start-up box forges link between optical switching and terabit routing.

BY JIM DUFFY

LEXINGTON, MASS. — As if enterprise customers haven't heard enough about terabit router start-ups and how their equipment will foster a new generation of data services . . . well, get ready to listen again.

IronBridge Networks, the quiet start-up, is getting ready to roar with a box designed to bring virtual private networks (VPN) and converged voice, data and video services to enterprise networks by tightly integrating terabit routing with optical switching.

IronBridge has been around for more than two years. But instead of talking about products a year ahead of field trials or showing unpowered sheet metal in trade show booths, IronBridge is shedding its skin now because the company not only has something to say, it also has something to show.

"Everything important happens between now and the end of the year," says company president and CEO Paul Lazay, referring to a terabit router that's three weeks ahead of schedule and six months from reaping revenue for IronBridge. Lazay was like a kid on Christmas morning because IronBridge had just received ASICs from LSI Logic that enable the router to maintain sessions with Cisco's venerable 7500 router.

The IronBridge router — the name of which the company did not disclose in an exclusive briefing with *Network World* two weeks ago — will end alpha testing in April, enter beta testing in late June or early July, and will ship by the end of September, Lazay says.

The IronBridge way

Features of IronBridge's router will include:

- Tightly integrated optical switching with terabit routing.
- Central switch architecture.
- Software for analyzing and engineering traffic.

The box features 16 60G bit/sec shelves for an aggregate switching capacity of 960G bit/sec. The routers also features a 44G bit/sec fiber optic bus called POCO — Packets Over Cheap Optics — for interconnecting multiple switch fabrics into a multiterabit system and for connecting the router to dense wave division multiplexing optical cross-connects in the core of the Internet.

Typically, terabit-class routers use SONET ports to connect to optical cross-connects, which deprives service providers of revenue from using those ports to deliver service, Lazay says. The POCO bus unlocks those revenue-generating ports while providing a migration path to optical switching, he says.

Indeed, IronBridge plans to replace the electrical central switch fabric in its routers to an optical central switch in three years, Lazay says.

"In the next three years, we'll go from a terabit router with optical ports to an optical switch with terabit-routing ports," he says.

Such integrated optical networking will facilitate easier service provisioning and — with the help of IronBridge management software — intelligent traffic engineering by selecting optimal paths and balancing loads by setting up virtual trunk groups, Lazay says.

This will make it easier for service providers to quickly turn up new IP services, such as Multi-protocol Label Switching-based VPNs and service-level agreements for converged multimedia traffic, Lazay claims.

The IronBridge router is likely to sport OC-48 and OC-192 interfaces when it ships this fall, sources say, but IronBridge marketing managers were mum on these details. ◪

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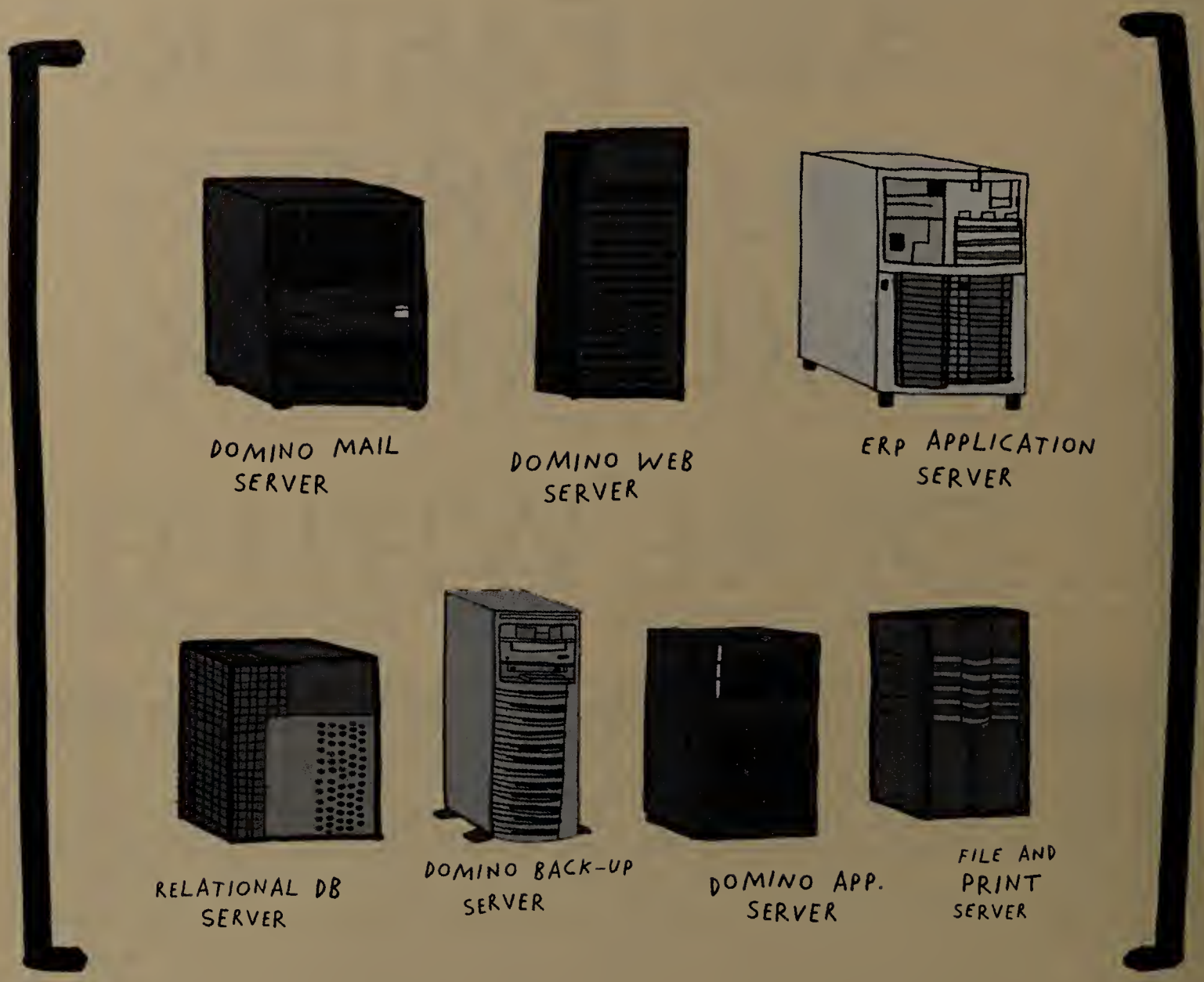

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Ezenia beefs up videoconferencing family

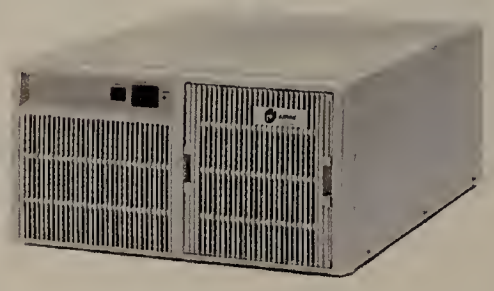
BY JASON MESERVE

BURLINGTON, MASS. — Ezenia, Inc., formerly VideoServer, is looking to make it easier for users to run and manage videoconferences via a Web browser with its new Encounter 3000 family.

The Encounter family, introduced last week, includes beefed-up multipoint control units (MCU), gateways and tools for managing bandwidth usage when using IP-based video endpoints. MCUs connect multiple videoconferencing endpoints into a single conference.

Ezenia's Encounter eCMS is software that lets users schedule calls via a standard Web browser, while network professionals can control users and groups of users through a similar interface. Without eCMS, users have to go through the individual endpoint's sometimes clunky interface to connecting to users.

"We really want to drive the complexity out of setting up a conference," says Arthur Souza, vice president of marketing at Ezenia.



The Encounter NetServer multipoint conference unit combines software with digital signal processing chips.

The eCMS software runs on Microsoft Windows NT Internet Information Server and can use a SQL Server database for storing user and conferencing information. eCMS also includes a feature called Conference Now! that allows ad hoc group conferences to be set up via a browser. Users select who they want in the conference from a directory, and the software directs an MCU to make outbound connections to all users participating in the conference, so end users do not have to dial directly, Souza says.

Also included in the Encounter 3000 line:

- Encounter NetServer MCU, which combines hardware and software to connect up to 64 H.323 (IP) videoconferencing endpoints simultaneously, in one or more than one conference. Two NetServers can be linked to double capacity to 128 users in a process known as cascading. The hardware consists of a PC-based chassis with digital signal processor chips running Windows NT.
- Encounter NetGate, which is built on a chassis similar to NetServer's and is used for connecting between H.323 and H.320 (ISDN) endpoints.
- Encounter GateKeeper, which monitors bandwidth consumption and manages user access.

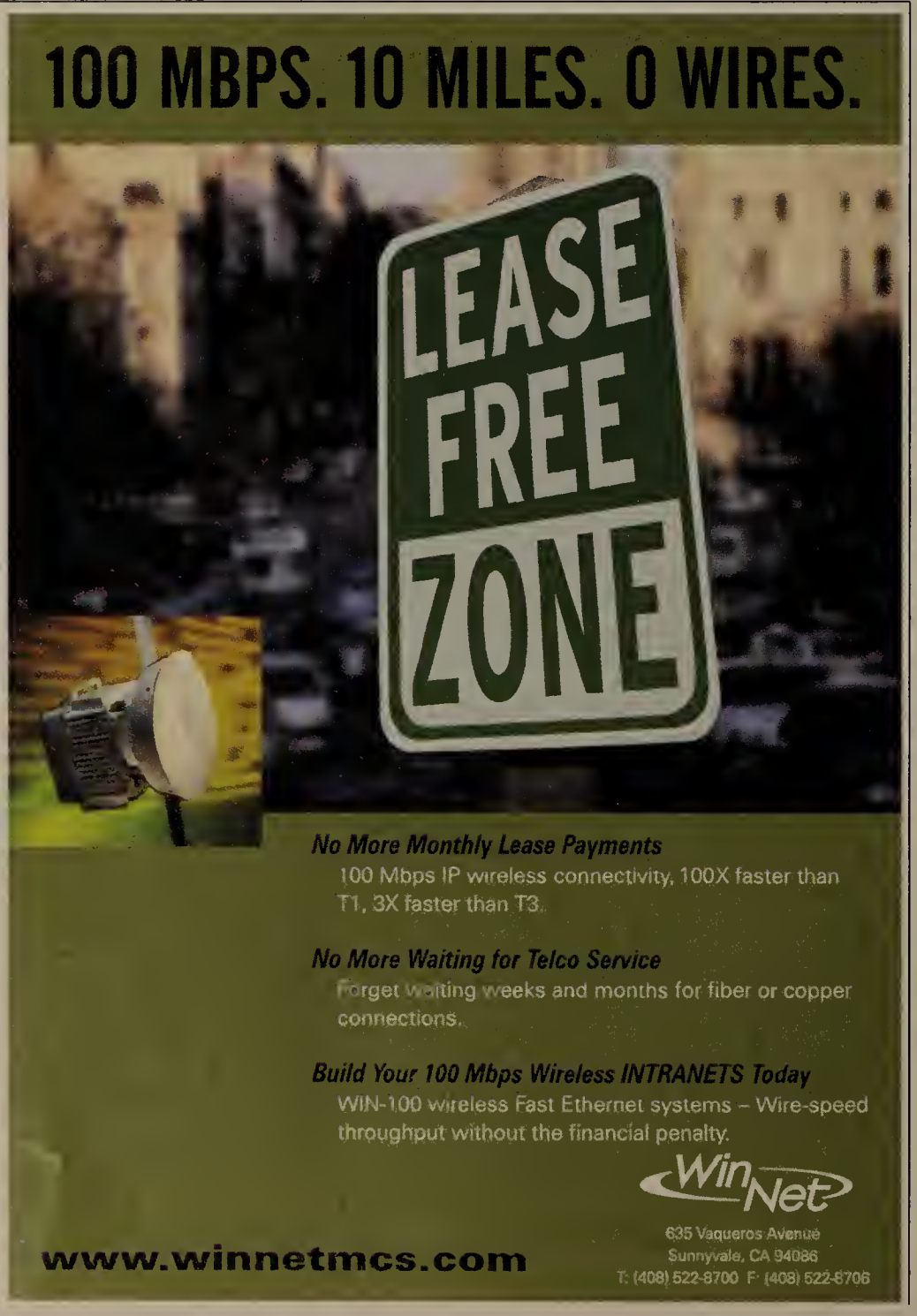
In addition to adding Web-based management, Ezenia is adding continuous presence, giving users the ability to see up to four users simultaneously on their PC monitor.

Though the new family has a number of new features, it is expensive — prices start at $16,000 for an Encounter NetGate that supports up to four users and comes with the eCMS software. "It's not clear how their price structure will fly in the IP market, where people are not used to paying that much," says Andrew Davis, managing partner at Wainhouse Consulting Group in Brookline, Mass. "It's great stuff, but not everyone wants a Mercedes Benz."

In the IP-based MCU market, Ezenia's chief competition includes PictureTel and White Pine, which both offer less expensive, software-only packages. For instance, White Pine's MeetingPoint MCU runs on Linux, Solaris and Windows NT and starts at $8,995. Davis says that Ezenia's combination of hardware and software tends to provide a more consistent conference quality from the first user to the last.

Souza says all four products in the Encounter 3000 family will be available sometime in March.

Ezenia: www.ezenia.com



Red Hat,
continued from page 19

Oracle8i product for Linux. Previously, separate and time-consuming calls to both vendors were necessary to sort out a problem. Red Hat says the partnership will be followed by others later this year, including those for directory services, messaging and enterprise resource planning applications.

The support services from Red Hat will be available 365 days per year and 24 hours per day — fairly standard for enterprise-class offerings. Pricing will vary depending on an end user's configuration, according to Paul McNamara, general manager of enterprise systems at Red Hat.

"Business customers are looking for the assurance that we can solve a problem if they have one, and this program will allow us to provide them with that," McNamara says. Red Hat's program might not be as significant if Linux were as well-established as Microsoft's Windows NT, but as a newbie in the enterprise world, service and support agreements with the backing of companies such as Oracle mean a lot, observers say.

Support services and the ability to tightly integrate Red Hat Linux with critical business applications are two key steps to overcoming corporate skittishness about Linux, says Dan Kusnetzky, an analyst with International Data Corp. (IDC) in Framingham, Mass.

He notes that while many IT managers are open to Linux, few are betting their mission-critical applications on it so far, instead relegating it to lesser areas. IDC research states that Linux paid shipments grew faster than any other server operating system over the past two years. IDC preliminary figures for 1999 show that Linux shipments comprise 24.6% of the server operating system market, up from 15.8% in 1998.

The company's agreement with RealNetworks will provide users with an optimized version of the RealSystem G2 streaming software family. Additionally, RealNetworks' RealServer 7.0, part of the G2 family, will be physically bundled with Red Hat Linux, with service and support provided by both companies. RealServer 7.0 allows companies to stream media over the Internet.

The Enterprise Edition Program for Oracle and Computer Associates is already available. The RealNetworks component will be available in March.

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Wired Windows . Dave Kearns

WIN 2000 EXPO: I'D RATHER HAVE BEEN FISHING

Since breaking into the network business 15 years ago, I've attended many a trade show. NetWorld, Interop, NetWorld+Interop, Comdex, BrainShare, TechEd and numerous smaller shows that come and go as times change (remember Network Expo?). Without a doubt, though, the recent Windows 2000 Expo was one I could easily have skipped.

Whether it was because of the long delay in shipping Win 2000 or the huge amount of "pre-marketing" Microsoft has done over the past year or two, attendees didn't have that same excited antieipation I'd seen for other produet launches, such as Windows 95 or NetWare 5. The general attitude among show-goers I spoke to was relief that the long wait was over, coupled with a tentative commitment to upgrade.

No one I spoke to was determined to head home to upgrade their NT 4 servers (or their NetWare servers) to Windows 2000 Server or Advanced Server. Most, though, would gear up to install Windows 2000 Professional as an upgrade to Windows 95/98 systems, but even this would slowly be implemented over the next six to 12 months.

The vendors appeared to have a similar reaction. Although most showed Win 2000 versions of their products, they hedged their bets by also promoting NT 4 versions or upgrades to the older Microsoft operating system. Sunbelt Software's Stu Sjouwerman, for example, promoted new utilities for NT 4 and promised a Win 2000 version in the second quarter of this year. (See this week's Fusion Focus on Windows Networking newsletter for more on the product — www. nwfusion.com/focus/).

In fact, it was only the migration specialists (such as Mission Critical and FastLane) that appeared to have any hope that people would quickly move to Win 2000. In light of what most industry pundits — and even firm friends of Bill — were saying, it could be mid- to late 2001 before Win 2000 servers outnumbered NT 4 servers in the enterprise.

None of this is good news for Microsoft or the industry. Sales of Win 2000 and associated products over the next six months could lead to the investment community turning a jaundiced eye to lowered sales and profits throughout the hardware and software business, and fuel a sell-off in the already teetering stock market.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

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Tip of The Week

The remarkable success of my "Focus on Windows Networking" and "Focus on Directory Services" newsletters (thank you, readers!) has led Network World Fusion to agree to add another. Beginning the week of March 7, you can also get my "Focus on NetWare" newsletter twice a week. Sign up now at www.nwfusion.com/focus/ so you won't miss a single issue.

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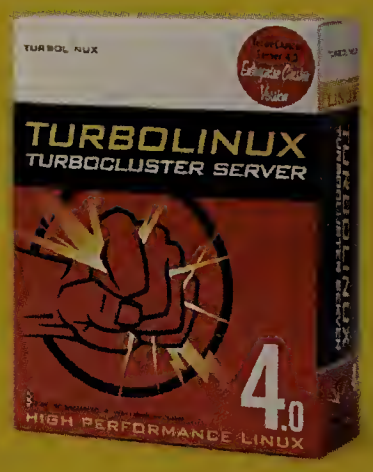

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Briefs

BellSouth has chosen **Telco Systems'** EdgeLink 300 integrated access device as a new customer premises equipment option for its MegaLink Channelized T-1 managed service. The BellSouth service concentrates voice, data and video traffic over a single T-1 link. The EdgeLink 300 also provides the option of a dual T-1 for up to 48 separate 64K bit/sec voice or data channels. Telco, of Norwood, Mass., is owned by **World Access** in Atlanta, but is in the process of being sold to **BATM Advanced Communications,** an Israeli internetworking systems company.

NaviSite is expanding its streaming media service capabilities through acquisitions and partnerships. NaviSite, a Web-hosting and application service provider in Andover, Mass., announced last week it is buying **ClickHear,** a streaming media professional services company. Terms were not disclosed. NaviSite also announced agreements with **Activate.net,** an Internet audio and video service provider, and with **iBeam Broadcasting,** a satellite streaming media service provider. NaviSite plans to combine service offerings from Activate.net and iBeam into its high-end Web-hosting services.

NaviSite: www.navisite.com

PSINet last week announced the launch of a new venture capital program called **PSINet Ventures.** The company will provide early to midrange financing for fledgling application service providers, content service providers, e-commerce companies and the like. The fund will be worth a total of about $1 billion, including the value of Internet services provided to portfolio companies and $100 million in cash.

Broadwing boasting fast circuit installs

New data-services carrier promises circuits within 45 days or less — or else you get a credit.

BY DAVID ROHDE

AUSTIN, TEXAS — A new national data-services carrier is betting it can attract enterprise users by guaranteeing to install circuits in 45 days or less — no ifs, ands or buts.

Well, maybe a few buts, but at least those are clearly disclosed and easily found on the Internet.

The new carrier is Broadwing, which was formed in November by the merger of two established carriers that each lacked a key piece of the national service-provisioning puzzle.

One of the former carriers is IXC Communications, which over the past couple of years has combined the sale of wholesale high-capacity circuits to other carriers over its 15,000-mile domestic network with cut-rate data services such as frame relay for midsize businesses.

The other is Cincinnati Bell, which despite its name is not a regional Bell operating company but an independent vestige of the old Bell system with an unusually high reputation for customer service — but little national name recognition.

The combined company is promising to install frame relay, dedicated Internet access, ATM and private-line services in 45 days or less, or issue a credit of up to two months' worth of port and circuit charges. The credit will be one month if the service is installed up to 30 days late or two months if the service is more than 30 days late. In an unusual concession for a long-distance company, the credit even includes the local access charges, though Broadwing won't refund the one-time installation charge.

Broadwing officials say IXC couldn't move into the high-volume delivery of data circuits — particularly for the large enterprises it now hopes to attract — until it installed a mirrored version of Cincinnati Bell's order-entry and provisioning systems in IXC's Austin data center. Broadwing uses a mix of vendor-supplied and proprietary software to manage logical circuits — in a package it calls Circuit Vision — to identify choke points in broadband carrier networks.

"Bandwidth and fiber are just the physical infrastructure," says Ian Dix, Broadwing's vice president of marketing. "You have to be able to view the availability of any given circuit and know what circuit goes where. That's the tricky part of provisioning."

Recently other carriers have had to concede that they have been missing customer service intervals. Carriers say that although dark fiber is available on their networks, installation of certain electronic or optical equipment has been running behind orders being promised to users.

Broadwing's national network does not reach into many of the less-populated areas of the country, and in many cases Broadwing will have to lease pieces of a

See **Broadwing**, page 34

PROFILE: BROADWING

Headquarters:	Cincinnati and Austin, Texas
Founded:	1999, as a result of the merger between IXC Communications and Cincinnati Bell
Business:	Frame relay and ATM service provider
Combined 1999 revenue:	$1.6 billion
Number of employees:	5,500
Fiber route miles:	15,000
ATM/frame relay switches:	38

START-UP CONNECTION

Epoch Internet debuts Web-hosting service

BY DENISE PAPPALARDO

COSTA MESA, CALIF. — Epoch Internet this week is rolling out new Web-hosting services that promise users robust content storage and delivery.

Epoch is introducing its first dedicated Web-hosting offerings, called EpochHost Dedicated and Collocation services. Epoch's services offer small to midsize businesses high-end features such as storage management, load balancing and bandwidth management.

What sets Epoch apart from many competitors is a distributed architecture setup, says Courtney Munroe, program director at International Data Corp. (IDC), a market research firm in Framingham, Mass. Epoch calls this its "pod" architecture.

Instead of setting up one storage server to one Web server for each customer, Epoch has set up large fault-tolerant storage servers from Network Appliance that connect to up to six Web servers. Epoch has also deployed Foundry Networks load-balancing switches that intelligently send traffic to any of the six Web servers that are not congested.

The Web servers are used to process end-user requests for Web content. A Web server extracts that content from a storage server and offers it up to an end user. Regardless of which of the six Web servers is accessed, all transactions are recorded in real time because all Web servers are accessing the same storage cluster, says Paul Hoffman, vice president of hosting services at Epoch.

Epoch's Hoffman says the company's "pod" storage server/Web server setup means no lag time for online transactions.

If separate storage servers were used and not updated immediately, an end user may not be able to view a purchase or a request just a few minutes after making a transaction, Hoffman says. Lag time sometimes occurs because content storage systems are not all updated immediately — maybe every 15 minutes or so. Using one storage area eliminates that problem, he says.

EpochHost Dedicated service offers users set amounts of storage space on the Network Appliance servers starting at 5G bytes. Hoffman says each storage array on the Network

See **Epoch**, page 34

Broadwing,
continued from page 33

customer's circuit from other carriers. But officials say they're not going to use that as an excuse for failing to honor their guarantee, especially because IXC's wholesale background gives it good relationships with other long-distance and local carriers. "Provisioning something on-net and off-net is something that comes very naturally to us," Dix says.

There are other types of exceptions to the guarantee, however. It only applies to contracts of two years or more, and the guarantee doesn't count if a customer fails to maintain a specified schedule of presenting WAN design information and holding vendor meetings. The guarantee is posted publicly at www.broadwing.com/guarantee/terms.htm.

Broadwing's original enterprise data offering, when it was IXC, was a service called Eclipse SmartWAN, essentially a plain-vanilla, single class-of-service frame relay offering with lower prices than the top carriers: AT&T, MCI WorldCom, Sprint and Qwest Communications.

Though the Eclipse brand name is gone, Broadwing is maintaining the same pricing position, Dix says.

One big help: Broadwing has none of the regulatory restrictions that are legion in telecom mergers. Because Cincinnati Bell is not an RBOC, it did not bring any restrictions on long-distance transport to the merger. That issue is bedeviling the proposed Bell Atlantic/GTE and Qwest/US West mergers because both combine one company that for the most part cannot carry long-distance (Bell Atlantic and US West) with one that can (GTE and Qwest). ◪

www.nwfusion.com
TAKING WING
More details: Read up on the former IXC's frame relay pricing.
Tips: See how to negotiate contracts with your carrier.
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Epoch,
continued from page 33

Appliance server is physically separate, which is why the service is called a dedicated-hosting service. Epoch has been offering customers a shared Web-hosting service for a couple of years, in which users share storage and Web server facilities.

Epoch has also deployed Lucent's Xedia Access Point bandwidth management devices to ensure that bandwidth to each pod is distributed evenly among servers and customers.

While Epoch's data center architecture differentiates the offering, the company is facing a lot of competition, IDC's Munroe says: "Verio, Concentric Network and PSINet have all been offering small to midsize businesses Web-hosting [services] for a couple of years now."

One Epoch customer is impressed with the ISP's plans.

"Admittedly I was skeptical at first because many Web-hosting service providers offer the same type of services," says Matthew Olivia, chief technical officer at Infinite Axis, an application service provider and systems integrator. "But I was impressed with the quality of hardware, building security, and the 24-7 technical support and staff after I visited their facility."

After evaluating collocation service providers Exodus Communications, Alchemy Internet, Qwest Communications and Epoch Internet for six months, Infinite Axis chose Epoch.

According to IDC, small to midsize businesses spent approximately $832 million on Web-hosting services last year. By 2003, the same group is expected to spend $28 billion.

EpochHost Dedicated service is available starting at $650 per month for 5G bytes of storage space. Users can choose from IBM or Sun servers running Windows NT 4.0/2000, Red Hat Linux or Sun Solaris. Users can also choose from Microsoft's DB2, SQL Server or Oracle's database servers.

Epoch's Collocation service is available starting at $325 per month. Collocation customers supply their own server hardware and software. Epoch supplies Internet access, storage space and optional back-up services.

Epoch: www.epoch.net

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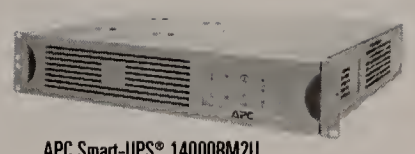

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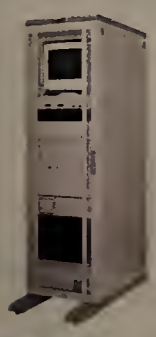

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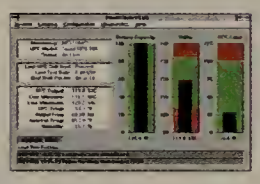

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Wan Monitor . Daniel Briere and Christine Heckart

BEAT THOSE 'STUCK IN THE BOONIES BLUES'

Living in a rural locale definitely has advantages — more trees, fewer ears, fresh air. However, it also has disadvantages. Finding *The New York Times* on Sunday can be hard, and sushi bars are few and far between. Most difficult — for those with home offices — is that broadband connections are just about nonexistent.

Take Danny, for example. He's been waiting patiently for someone, anyone, to offer digital subscriber line (DSL) or cable modem access for his home office. Unfortunately, he's just far enough away from his telco central office, ISP point of presence and cable head end to make that wait require the patience of Job. On the wireless front, the major Multichannel Multipoint Distribution Service and local multipoint distribution services providers aren't exactly beating down his door.

There is, however, a rapidly maturing wireless option that may save the day. A LAN technology getting attention in the home network and small office/home office markets, 802.11 Wireless Ethernet, can be extended to the WAN connection. You're probably already familiar with some of the 802.11 LAN products on the market — the PC cards and wireless access points that allow your executives to roam the office, laptop in tow, and stay connected to the LAN. Inexpensive 802.11 gear is also making a splash in the residential market, with companies like Apple bundling wireless networking into laptops and desktops.

Using the same standard (up to 11M bit/sec) and the same 2.4-GHz unlicensed spectrum, several manufacturers are beginning to offer outdoor wireless bridges that can stretch your LAN connection into a WAN connection, with ranges now extending up to 15 miles. Much of this gear is being used for corporate campus applications or for connecting nearby branch offices to headquarters. Another hot application for this gear is providing temporary point-to-point connectivity for special events such as conferences.

Additionally, a number of ISPs are beginning to look into this technology because the wireless bridges have point-to-multipoint capabilities that can make it easy to turn up multiple broadband wireless connections without having to spend a lot more on radio frequency hardware. On the client end, an external antenna and another wireless bridge connect to your home PC by Ethernet or wirelessly using 802.11 PC and ISA cards.

The biggest problem you'll probably face with implementing this kind of solution for your remote workers who are truly remote is finding an ISP that has deployed this gear. It may take a heart-to-heart talk with your local ISP to convince it to do the install. The hardware costs aren't too high, but the potential throughput of the system may overwhelm a local ISP that relies on a single T-1 connection to serve its usual V.90 customer base.

Until DSL and cable move out to that last 10% of the market or G-3 broadband personal communications services become a reality, this may be your best bet the boonies.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@ telechoice.com.

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Briefs

Mortice Kern Systems in Waterloo, Ont., is readying a product called Change Integrity that's designed to manage the workflow for teams maintaining information such as Web content and e-business applications. The product, currently in beta tests, includes a Java application server based on BEA Systems' WebLogic technology as well as Web and proprietary client software. Once one member of a project team has completed a task, the Change Integrity software automatically notifies others on the team to proceed with their tasks. Mortice Kern Systems is targeting midsize organizations with the software, which the company says works best in environments where not more than a few hundred end users are accessing a server. However, servers can be linked to support bigger project teams. The software is slated for availability in early March. Preliminary pricing is $3,200 per server with Secure Sockets Layer and $200 less without it, and $600 per client.

Mortice Kern Systems: www.mks.com

Sterling Commerce has sold its Managed Systems Division (formerly XcelleNet) to Francisco Partners, a private equity firm, for about $50 million. The Managed Systems Division will operate as a privately held, independent company based in Atlanta and will regain its XcelleNet name. XcelleNet will continue to offer products for managing remote systems. These offerings include Connect: Manage, which can be used to manage devices across intranets and extranets. Sterling Commerce bought XcelleNet in mid-1998, but XcelleNet proved to be a bad fit for Sterling.

XcelleNet: www.xcellenet.com

IN-SITE: *Lessons from Leading Users*

Fla. school district gives data-mining high marks

BY ELLEN MESSMER

A lot of companies use data-mining to comb through databases to figure out which of their products sells best and where. Now a public school district is using equally sophisticated technology to analyze student performance.

Florida's Broward County School District is outfitting each of its 207 schools with an IBM AS/400 running IBM's DB2 so school administrators can record student test scores and absenteeism, and analyze trends using IBM's desktop data-mining tools.

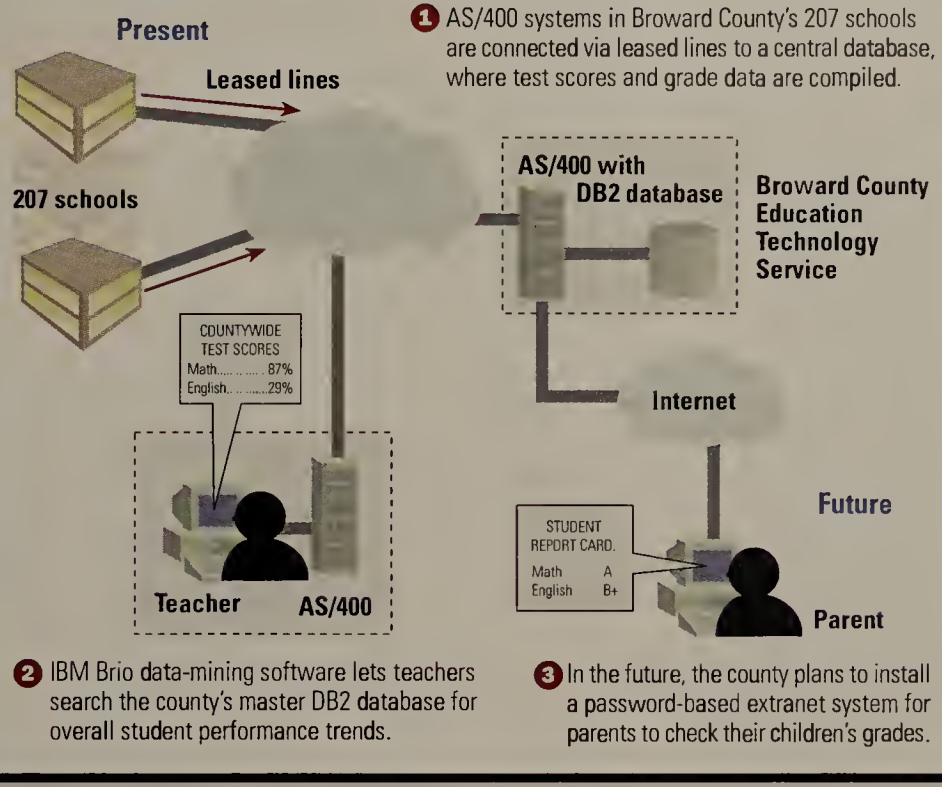
The goal is to give administrators an easy way to get a historical view of each child's academic performance, says Nancy Terrell, director of strategic planning and accounting for the district.

In addition, officials who want to see how their school performance compares with other county schools can get remote access over a private-line network connecting the schools to the central data repository maintained by the county's Education

See **Data mining**, page 44

This data mining is kid's stuff

Florida's Broward County uses IBM database and data-mining technology to collect and analyze student records.



1. AS/400 systems in Broward County's 207 schools are connected via leased lines to a central database, where test scores and grade data are compiled.
2. IBM Brio data-mining software lets teachers search the county's master DB2 database for overall student performance trends.
3. In the future, the county plans to install a password-based extranet system for parents to check their children's grades.

Times Ten speeds Web access

BY JOHN COX

MOUNTAIN VIEW, CALIF. — A new RAM-based data-caching product is designed to speed access to critical data on Web commerce sites.

Times Ten Performance Software's Front-Tier software consists of the company's in-memory database coupled with new replication and synchronization technologies. The result is a compact, blazingly fast data cache designed to serve up information such as product recommendations and personalized Web pages. Front-Tier loads onto a Web site server, pulling data from a back-end server.

It stores the data in RAM and delivers it in response to browser-based requests or transactions.

One customer is Checkout.com, the brainchild of Michael Ovitz and others who left Disney Online. The Web site, billing itself as the Entertainment Portal, is relying on Front-Tier to store profiles of each user accessing the site. The profiles are used to build each page dynamically, in effect creating a personal Web site for each user.

"The data needed to do all this, for the product catalogs, shopping cart contents and so on, can't come out of a disk-based database because it's too slow," says James Groff, Times Ten's CEO. He says that in tests, Front-Tier has handled 20,000 database transactions per second for a typical read-write application. For read-only database applications, the number has soared to 60,000.

For Front-Tier, software engineers built several key features on top of the basic database product. One is replication, so the Front-Tier cache can run on two or more servers, in case one server fails. The other main addition is synchronization technology that enables Front-Tier to upload fresh data to Oracle servers or pull down data from Oracle servers.

The software fits into 5M bytes or less of RAM. It can store up to approximately 2G bytes of data, which is the largest amount that can be addressed by a 32-bit computer, Groff says.

Front-Tier is available in several configurations. The starting cache size is 128M bytes, for unlimited users, with a price of $20,000. A 2G-byte edition would cost roughly $80,000.

Times Ten: www.timesten.com

www.nwfusion.com

TAKE 10

Review: Times Ten's Front-Tier software.

Close-up: A look at Times Ten competitor Angara.

DocFinder 7019 find it online

Critical Path expands e-mail outsourcing options

BY CAROLYN DUFFY MARSAN

SAN FRANCISCO — Until now, companies that wanted to outsource their messaging systems have faced an all-or-nothing proposition. Critical Path has introduced an alternative that it calls Allsourcing: a combination of in-house and hosted offerings that range from basic e-mail to calendaring, scheduling, fax and directory services.

Allsourcing encompasses three options:

- Outsourced messaging, which is hosted services bought on a monthly cost-per-seat basis.
- In-house messaging, which is packaged applications that companies can run themselves.
- A combination of outsourced and in-house offerings.

The Allsourcing strategy applies to e-mail, e-mail gateway services, groupware hosting, calendaring and scheduling, integrated fax, directory services, security services and wireless access. The company offers access to Post Office Protocol and Internet Message Access Protocol mail over the Web as an outsourced service, as well as hosted Exchange and GroupWise services. Eventually, Critical Path plans to add guaranteed delivery and archiving services.

Critical business moves

Recent acquisitions by Critical Path:

June 1999
Fabrik Connect, the e-mail outsourcing business of Fabrik Communications.

July 1999
dotOne, a corporate e-mail firm.

August 1999
Amplitude Software, an Internet calendar and resource scheduling solutions provider.

November 1999
XETI, a developer of standards-based public-key infrastructure offerings.

December 1999
FaxNet, an outsource supplier of carrier-class enhanced fax and integrated messaging services.

January 2000
ISOCOR, an Internet messaging, directory and metadirectory developer.

"E-mail used to be enough, and the IT department used to know how to do it," says Sharon Weinbar, vice president of marketing at Critical Path. Weinbar says many companies want to offload some services, such as support for remote offices, but keep others in-house, such as security. With Allsourcing, companies can mix and match messaging products and services but get integrated provisioning and billing, she says.

"This strategy will play pretty well," says Chris Selland, a vice president at The Yankee Group, a market research firm in Boston. "A lot of companies are interested in the idea of outsourcing their e-mail, but they'd like to stick a toe in the water. Until now, they haven't had that option."

Critical Path's Allsourcing strategy is an outgrowth of an acquisition binge that began last spring after the company went public. Critical Path, which expects to generate about $100 million in revenue this year, has acquired eight messaging vendors since May, including ISOCOR and FaxNet (see graphic).

"Over the long term, buyers will want to see integrated offerings," Selland says. "It's one thing for a company to outsource its e-mail, and it's another thing to outsource its whole unified messaging system. Companies are going to want to buy this piece-by-piece but have it all work together."

The Allsourcing strategy is attractive to SolutionBank, a Salt Lake City consulting firm that builds back-end systems for e-commerce Web sites for companies such as Lands' End, Litton Industries and Alcan Aluminum. In two years, SolutionBank has grown from five to 320 employees. By outsourcing its e-mail to Critical Path, the start-up was able to focus its IT resources on such mission-critical applications as financials and sales force automation.

"We knew the e-mail infrastructure was not a capital expense that we wanted to invest in," says Coleman Barney, a senior vice president at SolutionBank. "The whole experience has been a little better than we would have expected."

SolutionBank uses Microsoft Outlook as its e-mail client, with Exchange as the server software. Employees have instructions for setting themselves up on the system, and then Critical Path handles everything else. Barney says SolutionBank is re-evaluating its messaging strategy and may add some of the new services that Critical Path offers. "Faxing and directory services are a distinct possibility," he says.

Critical Path: www.cp.net

Concord gets more proactive

New offerings designed to go beyond historical trend reporting.

BY MARC SONGINI

MARLBOROUGH, MASS. — Concord Communications, best known for its tools that report on historical network performance trends, last week rolled out products that will give customers more immediate feedback on how their networks are running.

The offerings, including a management console and agents for monitoring applications and Web resources, are the first new products out of Concord's Empire Technologies unit, which was formed when Concord bought Empire last fall. Empire specializes in products that monitor servers, applications and other parts of enterprise networks in real time.

Concord says the new AdvantEdge tools will better enable firms to determine if service-level agreements (SLA) for their networks are being met. The tools also give Concord a boost in competing against the likes of BMC Software.

The AdvantEdge suite is based on SystemEdge, a set of SNMP agents installed on servers and desktops to monitor the performance of the machines and the applications running on them. The software can track end-user response times and report back on this performance to a company's IT staff. The software can also be used to respond to outages, such as by restarting downed Web servers.

Concord is now introducing a console, dubbed AdvantEdge View, which lets companies control the agents and look at the data they collect. The View console can be used to configure agents individually or in groups, so that groups of agents can work together to accomplish a task.

The View console software actually resides on a SPARC-based workstation, but can be accessed by client machines outfitted with browser software. Previously, SystemEdge users could only view data through existing management consoles, such as Hewlett-Packard's OpenView.

Also new is a SystemEdge module dubbed Top Processes that can notify IT staffers about which applications are eating up the most CPU cycles on a server. Using this information, companies can then redistribute workloads to make sure performance levels don't sag.

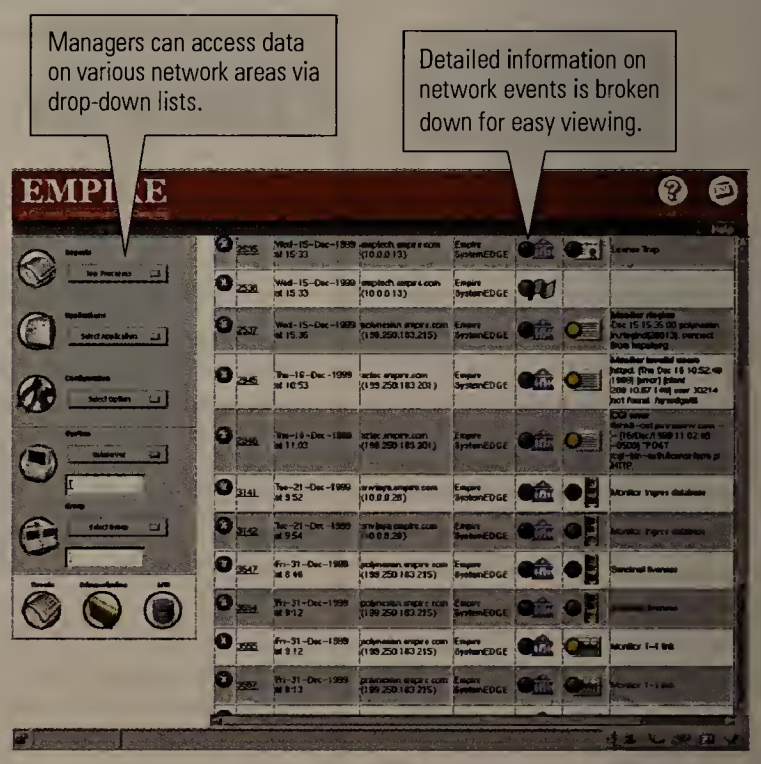
Another new SystemEdge module is called Service Response. It watches the performance of WAN connections, Domain Name System and Web programs running on Windows NT or Unix servers. The software monitors response times to help maintain SLAs.

AdvantEdge View starts at $10,000. Service Response starts at $5,000 for a 10-host pack, and the Top Processes module is free with the purchase of SystemEdge 4.0.

Concord: www.concord.com

A network with a View

AdvantEdge View gives companies a browser-based look at network status and performance.



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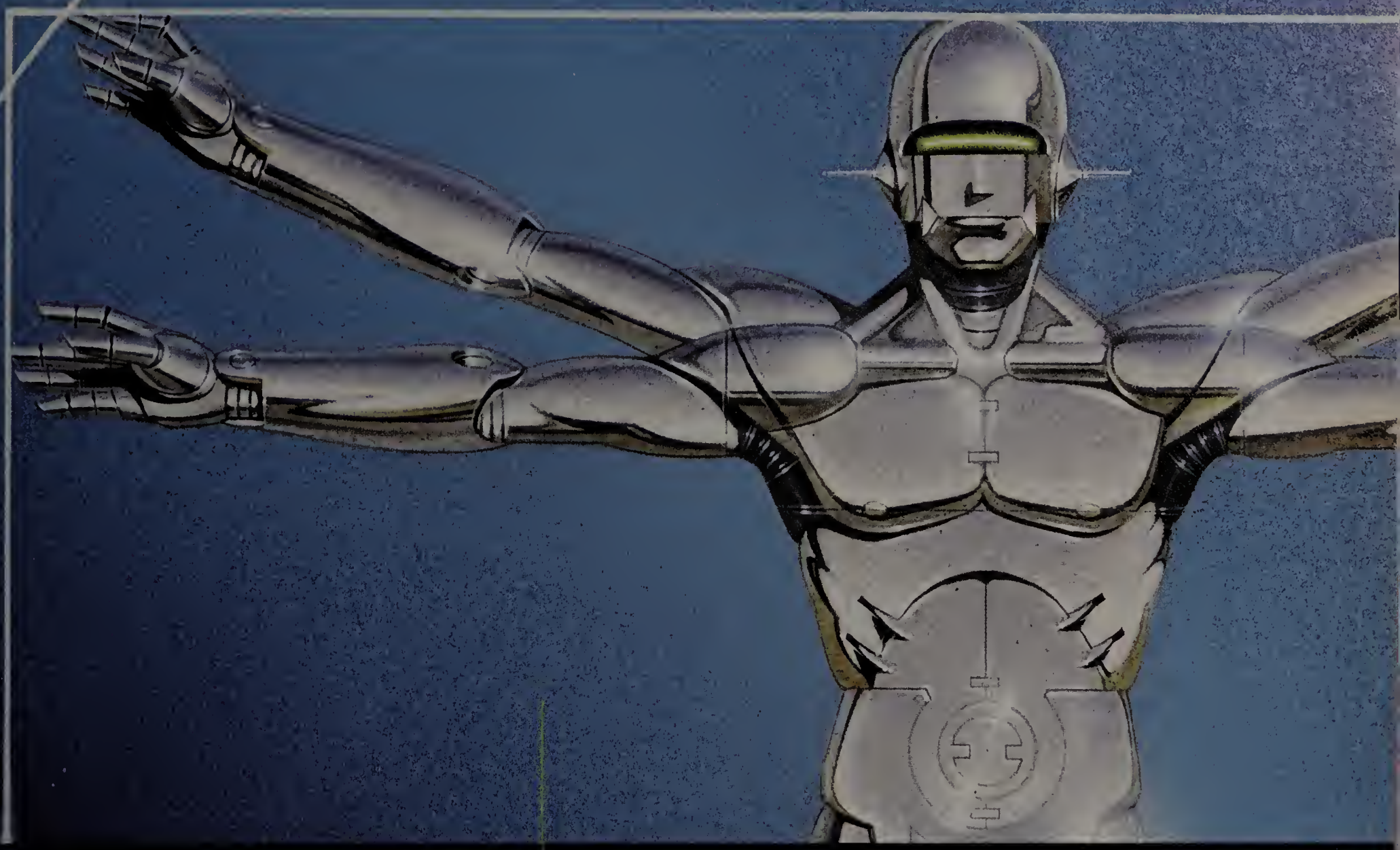

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Microsoft, Novell take fight to metadirectory front

Novell to showcase its DirXML offering at customer event; Microsoft readying Microsoft Metadirectory Services.

BY JOHN FONTANA

Novell and Microsoft's simmering directory feud is set to heat up again as both prepare to release tools for building metadirectories.

The vendors have been working for the past seven months to refine their products for building unified directories, and the release of those products appears to be on a collision course.

The metadirectory is becoming an important concept in the enterprise, where the number of directories averages in the hundreds, according to The Burton Group, a consulting firm in Midvale, Utah. The metadirectory promises to join those directories under a single structure.

Novell will showcase its DirXML at the company's annual Brainshare conference in late March, and Microsoft soon after will release its Microsoft Metadirectory Services.

Both tools will let companies connect their directories into a logical whole that makes it easier to administer users and resources, support network applications and extranets, and provide security services.

"IT organizations are starting to ask, 'How do I integrate internal and external directories?' " says Jamie Lewis, president of The Burton Group. "As enterprises move forward, they will have to decide how they will use metadirectories now that this technology is part of the base directory for Novell and Microsoft."

Managing relationships

Network professionals say the directory is key for managing relationships between end users and resources internally, as well as on the Web with business partners and consumers.

"Those relationships have to be managed and it can only be done through translation of data between disparate directories and that is the metadirectory layer," says Don Bowen, the directory architect for a large heavy-equipment manufacturer in the Midwest.

Novell plans to answer the challenge in July when it ships DirXML. In the next few weeks, the product will enter its fourth beta cycle with some 50 testers, according to Paul Corriveau, a Novell product manager. Novell demonstrated DirXML at the recent Windows 2000 Conference & Expo by creating users in Novell Directory Service (NDS) that were automatically added to Active Directory and vice versa using a DirXML connector.

"This is the next generation of integration, but we see Active Directory as just another spoke in the NDS wheel," Corriveau says.

Microsoft will counter with Microsoft Metadirectory Services, which integrates Active Directory and Zoomit's Via metadirectory.

Microsoft bought Zoomit in July of last year for its Via technology, which has a rules engine that uses scripting to link directories around a central hub.

"We think the directory at the hub will be the one with the greatest amount of interoperability," says Peter Houston, group product manager for Active Directory. "DirXML is either heavyweight synchronization or lightweight metadirectory. What we have is simple synchronization and powerful metadirectory."

Via has been available from Microsoft, but only through consultants due to its complexity. Microsoft Metadirectory Services won't alleviate all that complexity immediately, but a version due in the next 12 to 14 months will, Houston says.

The Burton Group's Lewis says Microsoft's biggest challenge is to reduce the amount of support needed to run Via. He says the company also must add support for XML.

Regardless, both Novell and Microsoft are helping push the directory to a new level.

"The vendors realize they need to provide metadirectory services, and we are starting to see the fruits of their labor," Lewis says. ◪

Why metadirectories?

The average enterprise has more than 100 directories, according to The Burton Group. Many enterprises are now trying to reduce the number of those directories, and one concept that may help solve that problem is a metadirectory. But what are metadirectories, and why are they needed?

- Metadirectories can merge information from various directories into a logical whole and provide access through various interfaces.
- They can also be built on an existing directory, such as Active Directory or Novell's NDS, or as a dedicated stand-alone directory.
- They help organizations better manage users, applications and resources, and provide better network security for both internal users and external business partners.

E-mail software aims to bolster customer service

Talisma adds chat capabilities to software, launches version for service providers.

BY ELLEN MESSMER

KIRKLAND, WASH. — Talisma has begun shipping the second version of its customer-relationship e-mail management software, a package that can help corporations conduct and analyze e-mail correspondence with online customers — a form of correspondence often called "closed loop e-mail."

Talisma Enterprise Edition 2.0 extends beyond e-mail management to include a chat system. The Windows NT-based offering also lets e-marketers blast out up to 25,000 messages per hour.

The chat integration is based on technology from Interactive Intelligence, says Michael McClure, vice president of product marketing. "People are moving beyond e-mail for e-commerce," he says. "With Talisma, you can now talk to someone in a chat session in real time."

In addition to the new version of its product, which starts at $10,000, Talisma this week will make its product available as a hosted application service. Exodus Communications will be the Web-hosting facility for the Talisma service, expected to cost about $4,000 per month.

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Data mining,
continued from page 39

Technology Service (ETS).

This data repository is also based on the IBM AS/400 running DB2. It is now getting daily student updates based on data input by school administrators during the regular course of their jobs at schools that use the new system.

With a population of 250,000 students, Broward County School District is the fifth-largest in the U.S. By next year, all the Broward student data is expected to be searchable online by authorized school administrators using passwords and IBM's Brio data-mining software for the PC or Macintosh. The county is also considering how to make select parts of the repository's information available on the Web to parents.

"We need to see how a child has done historically on standardized tests over a period of time," Terrell says. "We used to have a great many disparate databases, and it was hard to get that information. We had to go through a large, forbidding printout to do a comparison on how well one class did in comparison with another."

Mindful of privacy concerns, Broward County has taken steps to ensure that the central data repository in the ETS office will only display average scores of schools — not individual student scores — when accessed remotely. "I can't pull up an individual student's scores at school unless it's my own school," Terrell says.

Phyllis Chasser, senior data warehouse analyst for the district, says teachers who use the Brio software are discovering more about student learning patterns.

"One math teacher was very upset because his students were only doing average on math tests," Chasser says. "He went online at our data warehouse and found that a good portion of the students were scoring poorly on building graphics. He was surprised, and changed his teaching to focus more on graphics."

Broward County has been able to implement its data-mining project under a $2 million grant from IBM for "reinventing education" that covers the cost of services but not equipment. Data mining is already showing its value in letting school officials complete in an afternoon the kind of analysis that used to take several days, Terrell says. ◪

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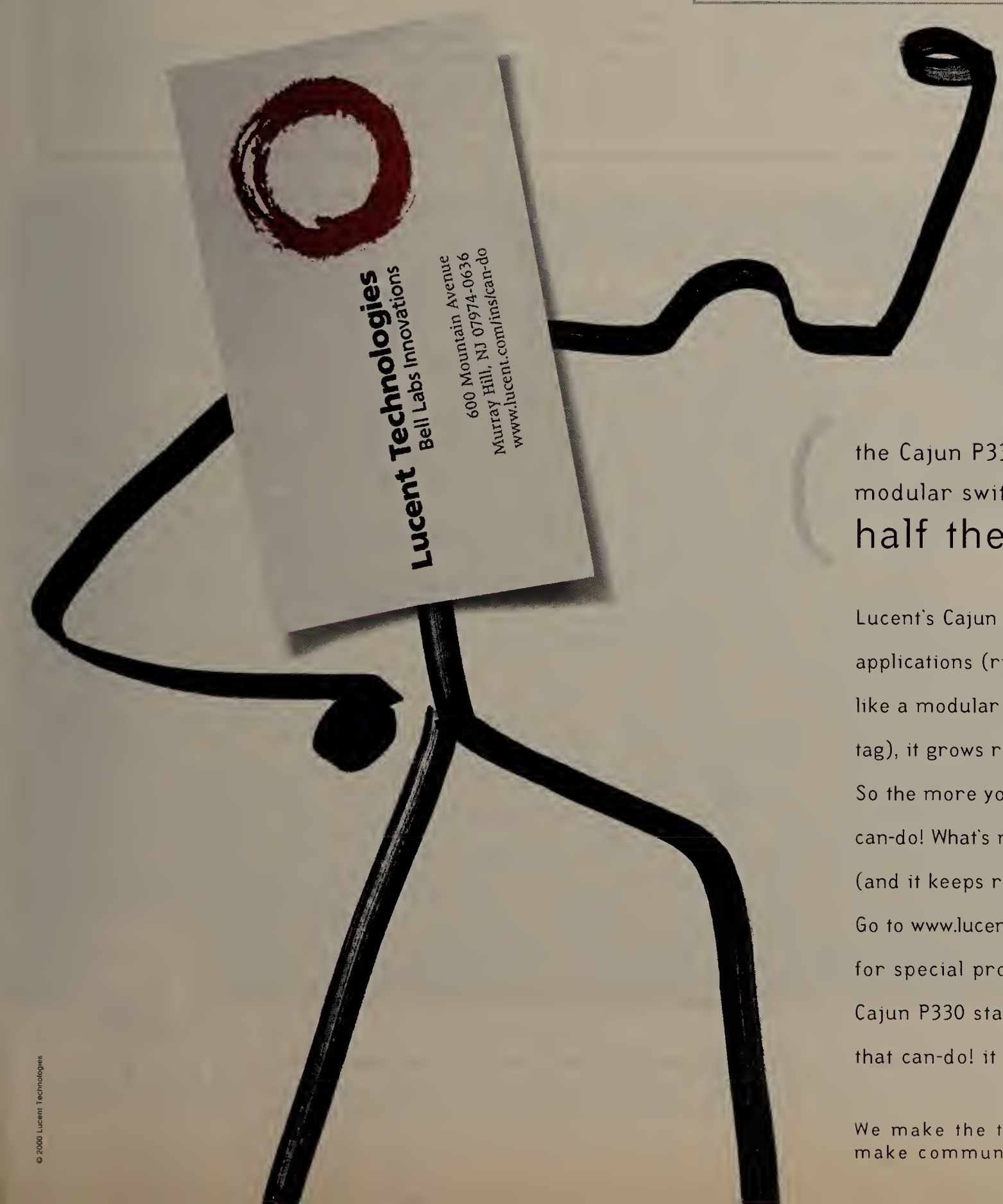

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'Net Insider . Scott Bradner

PLANNED STUPIDITY?

Every Internet user survey I have seen says that the thing users worry about most on the 'Net is not losing their credit card number, but losing their privacy. This concern among users is not a secret. So why do we keep seeing announcements of yet another company going out of its way to make sure Internet users continue to worry about this?

I used to think that traffic engineers, at least the ones who dealt with traffic patterns around highway construction, were an extraordinarily stupid and callous lot. How else could one explain behavior patterns that seemed to defy all logic? Just how much deep thought should it take to realize that painting a median strip guardrail during morning rush hour is likely to make about a bizillion drivers late for work?

But I've recently changed my mind and am starting to develop a grudging admiration for these people. I have had an epiphany. These people are too good at bad planning for it to be accidental. They must have had training.

There must be classes in traffic disruption in traffic engineering schools. I can think of no other explanation that fits the empirical evidence. I will admit that I've run across a few cases where the planning engineer must have barely squeaked through traffic disruption class. Traffic flowed too well through the construction site. But more often I've experienced situations in which the engineer must have taken an advanced degree in the topic — like two years ago in California where there was a two-mile, two-lane blockage for a 50-foot-long, 4-foot-wide construction site.

There is still a lot of highway construction going on, but I think that some of these highly trained engineers have started to branch out and take consulting jobs at companies such as DoubleClick.

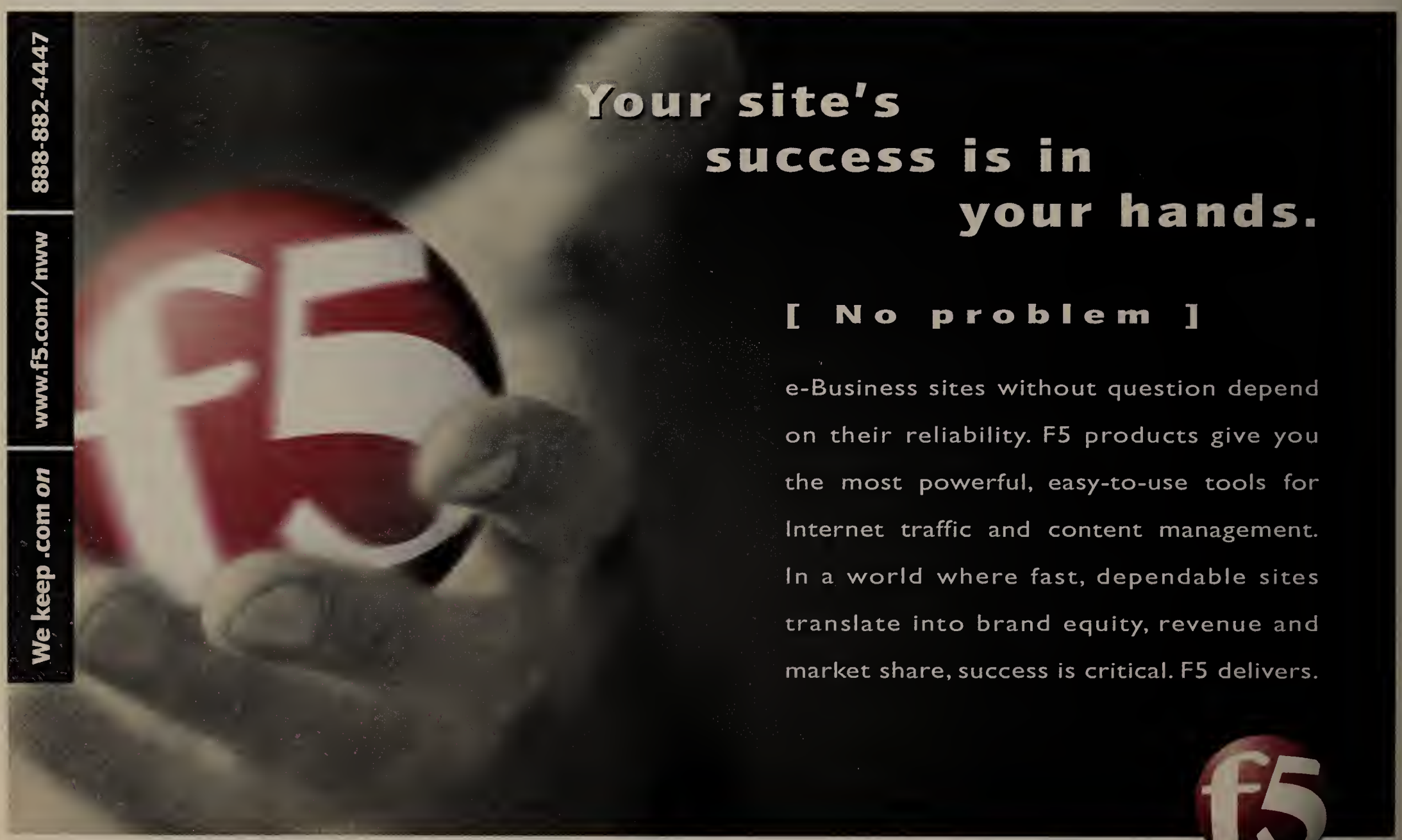
How else can one explain that company's recent activities? First DoubleClick promises that it will protect your privacy and never link surfing activity to individual identification such as e-mail addresses. Then the company turns around and does exactly what it said it wouldn't do. This gets DoubleClick written up in newspapers around the world as the epitome of a privacy invader. One would think that DoubleClick's privacy statement, which is easy to get to from the firm's Web page (www.doubleclick.com), would mitigate users' fears. But the statement is 1,657 words long — 3.5 times as long as this column. It takes a lot of words to be as unclear and condescending as that statement.

According to a press release, DoubleClick has now "launched a major advertising campaign to further educate consumers on their privacy choices" and has created a "new executive-level position of chief privacy officer."

A career opportunity for a traffic engineer with an advanced degree?

Disclaimer: I've not been able to find the above courses in the Harvard catalog, but I'm sure the university would do a good job if it offered such courses. Until then, the above deduction is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.



Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Intranet

By Steve Blass

We're using Samba in our intranet to serve files kept on our Unix servers to Windows 95 and NT workstation clients. It works very well with the NT clients, but the Windows 95 clients seem to hang and have terrible access-delay problems.

To improve Windows 95 client access to Samba, install the Microsoft patch listed in Knowledge Base Article Q236926, http://support.microsoft.com/support/kb/articles/q236/9/26.asp?LNG=ENG&SA+AL. Because of a math error, Windows 95 (including OEM Service Releases 1, 2, 2.1 and 2.5), Windows 98 and Windows 98 Second Edition suffer problems in the TCP/ IP stack in calculating the retransmit timer. Microsoft recommends the patch for systems communicating over high-delay nets, such as satellite links. It's reported that installing the patch can improve Windows 95 Samba performance by a factor of 10 or so. Before you patch your system, you can observe the TCP retransmission count by issuing the command "netstat–s" from a DOS prompt.

There is also a patch for NT 4.0 Service Pack 5 and below (the fix was rolled into NT 4.0 Service Pack 6). Knowledge Base Article Q232512 refers to the NT fix (there is a link to this from the Web page above). A list of Samba home page mirrors is available at http://samba.anu.edu.au/samba. The Samba Meta-FAQ is at http://uwsg.ucs.indiana.edu/ software/sourcedocs/faq/ Samba-meta-FAQ.html.

Blass is a network architect at Sprint Paranet in Houston. He can be reached at drintranet@paranet.com.

Keeping e-mail secure: No easy chore

BY MIKE ROTHMAN

Considering the sensitivity of information sent via e-mail, securing that correspondence is naturally a high-level concern.

Let's say you're an e-mail administrator, and you show up at work and get the fateful call. Your CEO had a nightmare about e-mail being used in an antitrust case, or documents being hijacked by a competitor. As a result, the firm's head of IT mandates that you secure all internal and external e-mail.

Unencrypted messages can be hijacked in transit and read or altered. If the mail is not digitally signed, you can't be sure where it came from.

There are many options for securing e-mail, all with a few strengths and probably more weaknesses.

Let's take care of the easy decisions. Secure/Multipurpose Internet Mail Extensions (S/MIME) should be the message encryption and digital signature format because it's the accepted standard and is built into leading e-mail clients such as Microsoft Outlook 98/2000 and Lotus Notes R5. Yet a standard such as S/MIME only takes you so far. Each vendor has implemented its own interpretation of S/MIME, which makes interoperability problematic. This drawback is exacerbated by the emergence of S/MIME Version 3 in the newest e-mail clients, which again could create interoperability issues.

The path of least resistance is to get an e-mail security gateway, which is analogous to a firewall for e-mail. Every message going in or out passes through the gateway, allowing security policies to be enforced (where and when messages can be sent), virus checking to be performed, and messages to be signed and encrypted. One drawback of the gateway approach is that it doesn't provide user-based security. For example, the gateway encrypts outbound messages so recipients can verify they came from your company, but recipients can't prove from whom they came.

Client-based methods use your private key to sign messages (proving it came from you), which is a more granular level of security, but they have weaknesses as well. First, they need to be configured on each desktop, which includes issuing a digital certificate to each user (for encryption and digital signature), and ensuring that a proper security profile is configured within the e-mail client. This requires a fair amount of user training and help desk assistance. Of course, if the profile is wrong — for example, specifying the wrong certificate or turning off encryption — the messages are not secure. And there is no way for an administrator to centrally control the profiles.

There are also a number of Web-based secure mail services that keep all messages within their environment at all times to ensure security. You use a secure site on the Internet to compose a message. Once you hit "Send," the site encrypts and stores the message on its site, and sends the recipient an e-mail notification that a secure message is waiting. The recipient links to the site, provides a shared secret for authentication, and accesses the message via Secure Sockets Layer. Unfortunately, this method does not work with existing enterprise e-mail systems.

The stickiest issue is building a directory of digital certificates. This directory holds the certificates needed to encrypt messages to a recipient. Internally, building the directory may not be a big deal because all certificates for a company can be published in a central Lightweight Directory Access Protocol server, but externally this causes many problems. You will need to establish an agreement with a recipient's organization to ensure access to the right digital certificates. This process, however, creates more user training issues and adds complexity to e-mail communications.

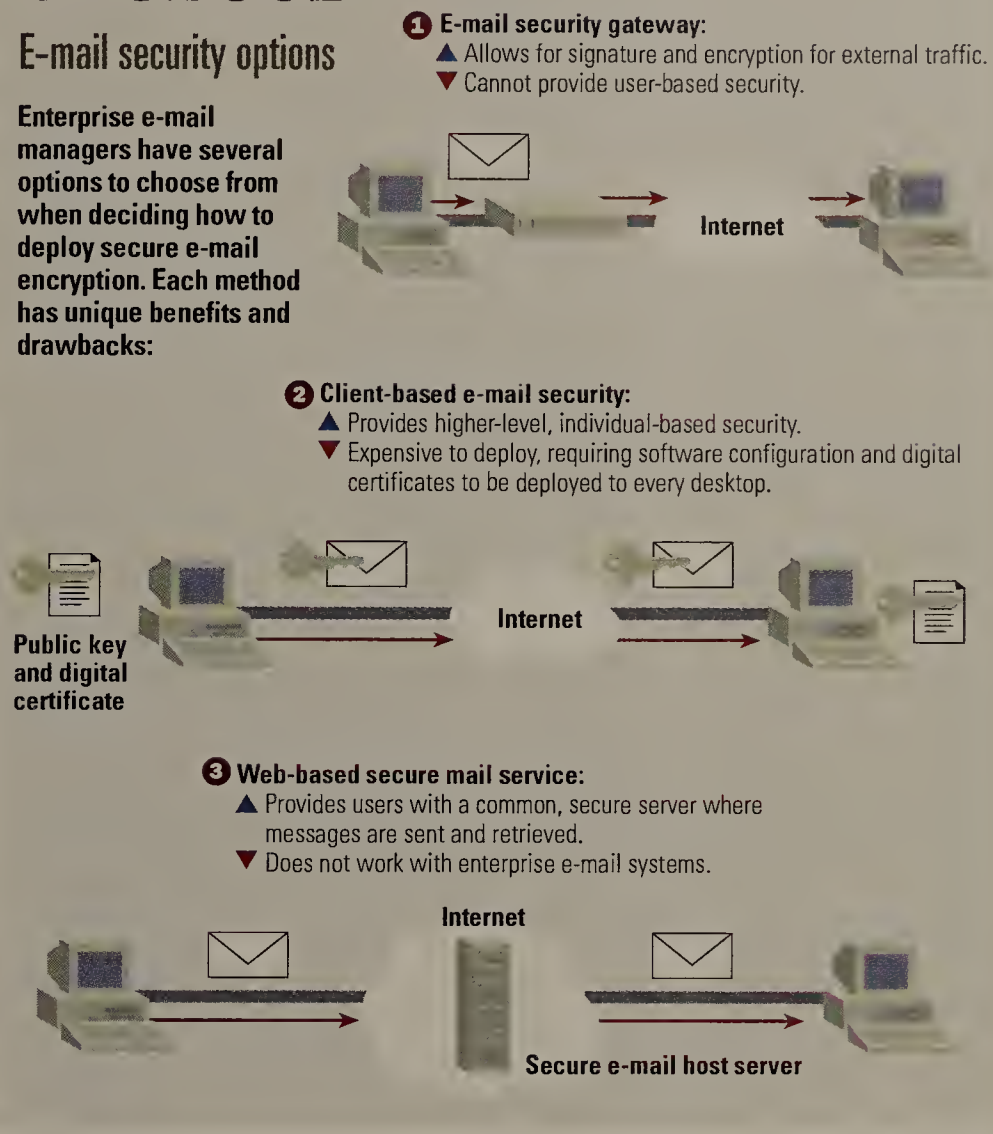
Although there is technology available for secure e-mail, widespread deployment is still problematic. However, as more companies and regular e-mail users see the need to secure their messages, the use of digital certificates will one day become a transparent part of your everyday activities.

Rothman is executive vice president of SHYM Technology, a security company. He can be reached at mrothman@shym.com.

UPCLOSE

E-mail security options

Enterprise e-mail managers have several options to choose from when deciding how to deploy secure e-mail encryption. Each method has unique benefits and drawbacks:



Gearhead — inside the network machine . Mark Gibbs

READING AND SPEAKING

In December, Gearhead enthused about the Rocket eBook from Franklin Electronic Publishers (*NW*, Dec. 6, 1999, page 52). Since then, the product has performed reliably and been put to far more uses than Gearhead thought possible. For example, the eBook is a great way of keeping reports, notes and articles on hand during meetings.

While the eBook has always had the facility to store bookmarks and allowed you to underline text, a recent release of its operating system, RocketEngine Version 1.3.74, introduced the ability to add handwritten notes.

Late last year, Franklin's Nuvomedia division (the group created from the original company that developed the Rocket eBook) licensed the Allegro handwriting recognition system from Fonix Corp. (www.fonix.com).

This is a great tool that appears to be at least as easy to use as handwriting recognition systems on Palm and WinCE devices, and it makes the eBook much more useful. Once the folks at Franklin get it into their heads that being able to export annotations is more than a nice idea, they may see sales go through the roof. That said, the addition of Allegro is hugely valuable.

Fonix also offers interesting products in speech synthesis. Unfortunately, Fonix doesn't provide try-before-buy schemes, so we have no idea how good these tools might be.

But Gearhead has found a couple of really neat speech synthesis systems that are available for evaluation. This week we'll take a look at Talking Stocks, from 4Developers (www.4developers.com). This product shows you what Microsoft's animated character helpers, or Office Assistants, could be, rather than the somewhat irritating distractions they are today (such as Clippit).

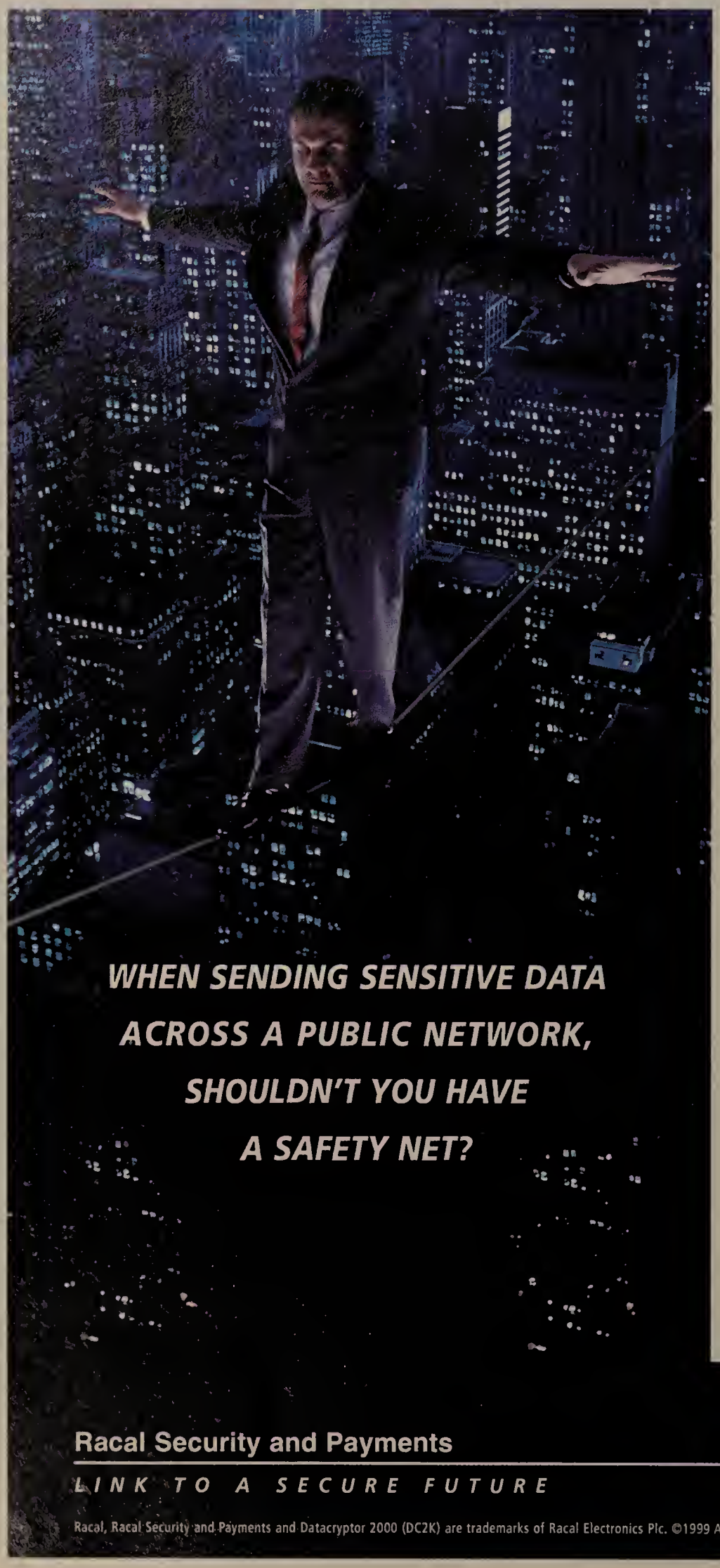
Microsoft Assistants, first introduced in Office 97, are described in www.microsoft.com/officedev/articles/Opg/009/009.htm. See Microsoft's Web site for more on how to drive this feature. Gearhead has had many heated arguments over the value of this technology but still believes that it has a useful role for new users despite its cloying cuteness.

Like the Microsoft Assistants, Talking Stocks (only $19.95) does have its quota of "Kute," in the form of a little man who poses and gestures excessively. All the same, his purpose defuses the saccharine — he's there to announce the time and report stock prices.

Unfortunately, the only character Talking Stocks offers is the little man. Gearhead definitely wants a robot to make announcements on the fate of our filthy lucre. We specifically want one that looks like Nova (www.novasark.com/preview/slideshow — your kids will love it).

You can control the speed and pitch of the synthesized voice. You can also set the frequency of announcements and configure alerts and how they should be reported. Thus you can have the little man appear and announce "Bad news, eBay has fallen 100 points" or simply tell you the current prices of your shares every 20 minutes. Fun, useful, and a good conversation piece.

Next week: More talking. Real speech to gb@gibbs.com.



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CITRIX

Opinions

Editorial

Struggling net shows need to be tuned up

A snowstorm ate the recent ComNet show, but what's eating the other big trade events?

Although the stalwart network shows still seem to do OK in terms of booth sales, empirical evidence suggests that attendance is waning. Crowds seem to have thinned out over the past two years, vendors seem a bit more cranky about traffic volume, and a few manufacturers simply don't bother to show up anymore.

Some would chalk up what I see as a general show malaise to the arrival of the Web, and that may be part of the problem. The Web makes it possible to efficiently collect reams of information from loads of sources, whereas a few years ago you could only do that at shows.

But conferences still offer a handful of things the Web can't. For example:

- Vendors make claims in brochures they won't make in person. Face time has to be the single-largest show benefit.
- While the small vendors are probably on the Web, many can't afford to make any noise. At shows you can cruise the backwaters, the start-up alleys, the minibooths, and get a glimpse at what is to come. If you were doing this a few years ago you would have seen Gigabit Ethernet before many others.
- Unfortunately, keynotes have morphed into advertisements (thank you Mr. Gates), but conferences still offer a way to pack lots of learning into a short amount of time.

But none of these things will do the big shows any good if they lose sight of the basics. They need to:

- Pick a focus. Many shows are amorphous, apparently confused about their mission — or worse — simply trying to cash in on the latest craze.
- Tone down the circus atmosphere. How can you conduct business if there is a three-ring act in the next booth?
- Figure out how to deliver more meaningful debate. Tutorials are great, but what we need is help comparing product architectures and feature sets.
- And finally, is it too much to ask for show guides that make sense? Half of them are worse than software documentation.

What do you think about shows? Do you go anymore? If no, why not? Drop me a line.

— John Dix
Editor in Chief
jdix@nww.com

Message Queue

NOS DEBATE RAGES ON

Your editorial "The raging NOS debate" (Jan. 31, page 44) shows that you still are not seeing the forest for the trees. You almost, but not quite, come out and insult all the readers who disagree with the test results.

What your readers are telling you is that real-world experience and your article are at complete opposite ends of the reality scale. But it appears that no one at *Network World* is listening or cares that the common theme of the messages is not "We love Novell and hate Microsoft," but that the tests and conclusions are highly suspect.

No one would honestly state that any version of Windows scales better than NetWare. By the same token, no one would say that NetWare is a better application server than Windows. But as a total network operating system, NetWare is the winner.

Please do your readers a favor and rerun the tests. This time, have one set of people design the test parameters, a second group of NOS-experienced people review the test parameters and a third group perform the actual tests.

Maybe this way *Network World* will regain some credibility about the tests and reports you publish.

Warner Orr
Network administrator
U.S. Bankruptcy Court
Phoenix

Regarding Mark Gibbs' "Backspin" column "Technology with emotion" (Feb. 7, page 94), about the abuse he received from readers for his opinion of the recent NOS review:

I think I understand the outpouring of emotion over the review, and I've been part of it. We're very tired of defending Novell and Unix in the face of overwhelming support for Microsoft products. Most of us have used Windows NT and found it generally lacking, and yet many of the companies we work for want us to install it anyway.

Nothing we say seems to make any difference. I think all of the passion comes from being ignored for so long.

Your readers don't want to see comparisons without winners; we want to see products made by companies other than Microsoft win for a change. They deserve it. They're better.

R.J. Wenzel
Lancaster, Calif.

I find it interesting that choosing a Microsoft product as the winner of a comparison is causing so much of a fuss. Not too long ago, such a win would have been accepted as yet another feather in the cap of a strong and successful software maker. My, how the worm has turned.

I have always found the conclusions of trade publications to be dubious at best. Your testers are always (and admittedly) unable to replicate anything even resembling a real-world environment. You test these products in a little black box and emerge from the smoke declaring a winner for all to see.

When it comes to determining something as vague as what is the "best" NOS, the good-hearted people at *Network World* are missing one key factor: There is a different "best" for every use. Maybe you should break your NOS reviews into categories — best file and print server, best application host, best Web server and so on — pick a best for each one and leave out the overall "best" rating.

Each NOS has something at which it is best. Let's make sure each product is given its due credit.

And while you are at it, you should spend less time worrying about which is the best NOS and start taking a longer and closer look at which tools are best for allowing all of these NOSes to interoperate. That will be the key technology for the future of networking and will allow us, the network administrators and managers, to pick the best NOS for each need.

Chris Miller
Network engineer
United Catalysts
Louisville, Ky.

Send letters to nwnews@nww.com or John Dix, editor in chief, Network World, *118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.*

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ADVERTISING SUPPLEMENT

THE BUSINESS VALUE OF CERTIFIED APPLICATIONS

Business applications are only as good as the care and quality that go into building them.

PUT TO THE TEST

Matthew Parsons, of Pfizer Inc., helped develop the challenging new specification for the Windows® 2000 certification program.

JOSHUA DALSIMER

Not scheduled for a tropical vacation this year? If TCO for your corporate technologies went south instead, some of your IT headaches could disappear anyway. | ***By Bill Laberis***

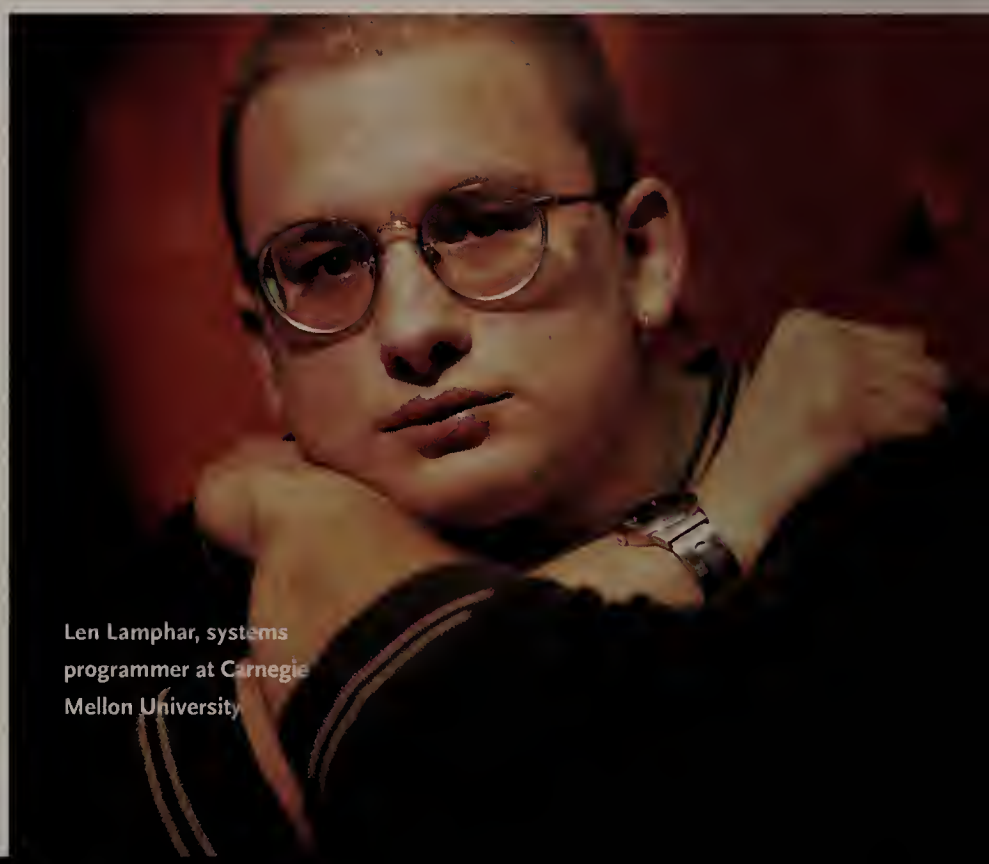
CERTIFIED APPLICATIONS: TAKING CARE OF BUSINESS

FOR A TECHNOLOGY TO HAVE maximum value, it must deliver core benefits to IT and to the organization. Simply put, these core benefits must make life better and the job easier for IT while lowering the technology's total cost of ownership (TCO) for the company.

You can probably count on one hand, without affecting your typing speed, the number of times a major product or technology has delivered on both promises. Thus, if something new comes along claiming such double-barreled value, your skepticism meter ticks up a notch or two. That was to be expected. Before now.

Available for users today, with more waiting in the wings, is an elite corps of applications which have been certified to make maximum use of the wealth of features in Microsoft's® Windows® 2000 operating system. These Windows 2000-certified applications provide users with the richest possible Windows 2000 experience and have passed a tightly controlled, independently verified testing process unlike any before.

In addition to the Windows 2000-certified applications, there are currently more than 7,000 non-certified applications that also run on Windows 2000. But the certification process and the applications that



Len Lamphar, systems programmer at Carnegie Mellon University

stand up to its test have been designed from the ground up to improve the overall quality of IT life, while making your organization more productive.

GETTING WHAT YOU NEED

What would make your life easier and your job better? If you have many PCs, workstations and notebooks in your management purview, then greater application reliability and management probably top your list of criteria for an improved worklife. And if you can improve reliability and management, preserve your company's investment in these technologies, *and* simultaneously deploy applications more quickly, then TCO will head south, where you want it to go.

For IT and the company to realize such benefits, several things must occur at the application-deployment and upgrade levels.

- Applications must install in a standard, unified way. This avoids costly rescripting of new software, while minimizing the "DLL hell" of conflicts among shared components.
- New applications software must integrate cleanly with all the existing software already up and running.
- The system must meet the demands of mobile professionals who increasingly insist upon going anywhere on the network and using any available machine there. These folks also want to see their individual user preferences on any machine they happen to use.
- Applications must run reliably in today's highly controlled and secure network environments, enabling administrators to control desktops even in a lockdown situation.

MAKING IT HAPPEN

For more than two years, a team of 10 major user organizations, several independent software vendors, and Microsoft have labored to produce the Application Specification for Windows 2000. The purpose of this detailed specification is to ensure that the applications certified under its rigorous standards fulfill the promise of the points above. The specification is a roadmap for building highly reliable applications on Windows 2000, and certification is a guarantee to the user that the application will fully exploit the benefits and new features of Windows 2000.

How tough are the specification and the certification process themselves? Greg Dowling, Managing Director at Credit Suisse First Boston, acknowledges that application vendors adhering to the specification may find the process difficult and demanding.

"But the benefits to those of us in the user community are substantial," notes Dowling, who helped draft the specification. "We are certainly going to use the specification as the basis for a standard for our internal developers. One of the things we certainly plan to do is include adherence to this specification as part of our software purchase criteria."

Another IT manager who helped Microsoft draft the specification is Matthew Parsons, of Pfizer Inc. Parsons, whose group deploys and supports both desktop and mobile network applications, says the specification accurately reflects, "on all the big items," the feedback developers gave Microsoft at the outset to maximize the business value of applications written to the specification.

> **"We see the Windows 2000 Application Specification as a valuable tool that we can use to evaluate software purchases. Applications that meet these specifications increase manageability and reduce our cost of ownership. We plan to incorporate compliance with this specification into our purchase criteria for new applications."**
> *—Tracy Futhey, Executive Director at Carnegie Mellon University*

DAVID ASCHKENAS

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5 Caere Corp.
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6 Alibre Inc.
Through Thick and Thin

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9 Gemplus S.C.A.
Smart Solutions

10 Damgaard A/S
Future Proof

11 WRQ Inc.
Mirror, Mirror

12 PTC
Taking it With You

AN ELITE CLUB

The rigor of certifying applications in compliance with the application specification is not lost on software developers either. The high certification bar notwithstanding, Microsoft has seen significant momentum for certification in its early stages. That momentum is related to the ultimate user benefits of certification, which place the emphasis squarely on quality of the applications certified, not quantity. This is also what gives the Certified for Windows 2000 logo exceptional meaning, because it is proof that the application will exploit the rich features of Windows 2000 to the greatest possible extent.

"The certification process certainly is harder," reports Rajiv Agrawal, director/research & development, PTC, Waltham, Mass., a developer of design and engineering software. "It is a very rigorous process," confirms Andy Staffer, director/research, Executive Software International Inc., Glendale, Calif., the developer of Diskeeper, a disk defragmentation tool. While both developers agree that the Windows 2000 certification process is significantly more detailed and involved than previous certification programs, they also concur that this extra effort is just what is needed

Major IT Benefits Of Windows® Certified Applications

Here's how Windows® 2000-certified applications give users the most reliable and productive experience on the Windows 2000 platform:

- Certified applications provide a uniform, standard and robust installation that is self-repairing and which minimizes conflicts among shared system components — the so-called "DLL hell." Certified applications use side-by-side DLLs and protect Windows 2000 system files. For example, if important application files and DLLs are accidentally deleted, desktop applications that are certified can repair themselves "on the fly."
- Certified applications use IntelliMirror™ technology to offer mobile or roaming users correctly maintained user preferences and computer settings. IntelliMirror technology also supports multiple users per machine and helps regenerate application settings when machines must be replaced. Administrators can install applications remotely, even on locked-down desktops.
- Network administrators can secure and control corporate desktops while running Windows 2000-certified applications in a controlled network environment or in a lockdown setting. Since they are assured that certified applications will run in a lockdown setting, administrators can reduce TCO by locking-down desktops to reduce the chance of errors created by users.
- For applications that are backward-certified on earlier platforms, Windows 2000-certified applications provide a seamless, controlled transition of the application for users who upgrade from previous versions of Windows to Windows 2000 Professional. Certification ensures compatibility among applications, the key to preserving the current IT investment.
- Support for OnNow power management in certified applications gives a PC the same instant availability that people expect from TVs and other common appliances, while reducing overall power consumption.
- Windows 2000-certified applications lower their overall cost of ownership through a consistent user interface which reduces training, support and testing costs. These applications can also assist users with specific needs, such as creating custom dictionaries.
- Certified applications promote greater accessibility standards in that persons with disabilities can use compliant software more easily.

IT managers can find further information on these and other features and benefits of Windows 2000-certified applications at http://www.microsoft.com/windows2000/upgrade/compat/certified.asp

to give users applications that are optimized to the fullest for Windows 2000. For example, developers appreciate that the certification process ensures that a product behaves correctly in the Windows 2000 environment, such as by minimizing conflicts among shared components.

Both PTC and Executive Software are among the first vendors to earn the Certified for Windows 2000 logo for their packages (see related stories, pages 5-12).

IMPROVING IT's WORLD — ONE APPLICATION AT A TIME

"The specification is excellent," says Len Lamphar, systems programmer at Carnegie Mellon University, long recognized as a test cell and seedbed for major new information technologies. "We can take a package off the shelf, see that it has this [Certified for Windows 2000] logo on there, and know immediately it will perform correctly in an environment such as ours."

Noting that "DLL hell is a reality... that could make every software installation something of a magical event," Pfizer's Parsons applauds the Windows Installer feature for its "significant" time-, and therefore money-saving, attributes, as well as for its overall ability to allow him to deploy applications with far greater consistency and without costly rescripting.

Parsons, who supports a far-flung user organization that includes many mobile professionals, also appreciates the built-in IntelliMirror™ management technologies that mirror systems, data and applications on a server. "Without IntelliMirror, we did a lot of custom coding to do what IntelliMirror does right out of the box," Parsons notes. "Now, for mobile users, we have custom roaming capabilities built right into the OS and the application."

GartnerGroup, renowned for its own tough brand of technology evaluations, noted that organizations using Windows 2000-certified applications will potentially increase the stability of their systems while lowering TCO through decreasing overall support, systems research, planning and product management, and user downtime. In its 1999 Research Note "The Windows 2000 Logo: More Teeth Added," GartnerGroup's Michael Silver determined that users could reduce desktop TCO by 27 percent by using certified applications, primarily because certified applications can leverage the Zero Administration Windows features of Windows 2000 for user profile management and software distribution.

The bottom line, as seen by GartnerGroup, is that "Managers who want to take advantage of Windows 2000 features should encourage their developers to follow Microsoft's appli-

continued on page 8

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Each of the following seven companies markets desktop applications that have earned the Certified for Windows 2000 logo. Certification testing for server applications began in February, 2000. by Alan Radding

CAERE CORP. | As the first application certified for Windows® 2000 Professional, OmniPage Pro 10® delivers a host of new benefits to the OCR market.

LEAVING THE PAPER BEHIND

"WINDOWS® 2000 CERTIFICATION is very important to us, a necessity in fact, to ensure our users that they will have no problems with our product," declares Natalie Miller, OmniPage Pro 10® product manager, Caere® Corp., Los Gatos, Calif. The company released OmniPage Pro 10 in October, 1999, and took it immediately for certification testing by VeriTest, the independent testing lab designated by Microsoft®. By mid- October, OmniPage Pro 10 became the first application certified for Windows 2000 Professional.

"OmniPage Pro 10 has proven its ability to be a premier Windows 2000-based application by passing the Certified for Windows 2000 requirement," declared Jim Allchin, senior vice president of Platforms, Microsoft Corp. "Rigorous testing has verified that OmniPage Pro® will be easy to deploy and manage in a Windows 2000 enterprise environment, providing features like self-repairing application, install-on-demand, and mobile features for power management and roaming users."

IMPROVED QUALITY

The extensive testing required for Windows 2000 certification has greatly improved the quality of Windows 2000-certified applications such as OmniPage Pro. For example, streamlined installation processes and system policies help corporations control deployment more effectively. Also, there is less chance for certified applications to conflict with each other, thereby increasing the reliability of the system, Miller reports.

The certification process also benefits mobile users. "The certification requires the applications to store user data under special folders [My Documents]. The folders can easily roam with the user. As a result, users are no longer tied to a single system, and they no longer have to customize each system separately as they desire," Miller continues. Also, key application data, such as user preferences, application state information, and temp files can be classified in various ways to support roaming and non-roaming users.

BEYOND THE PRINTED PAGE

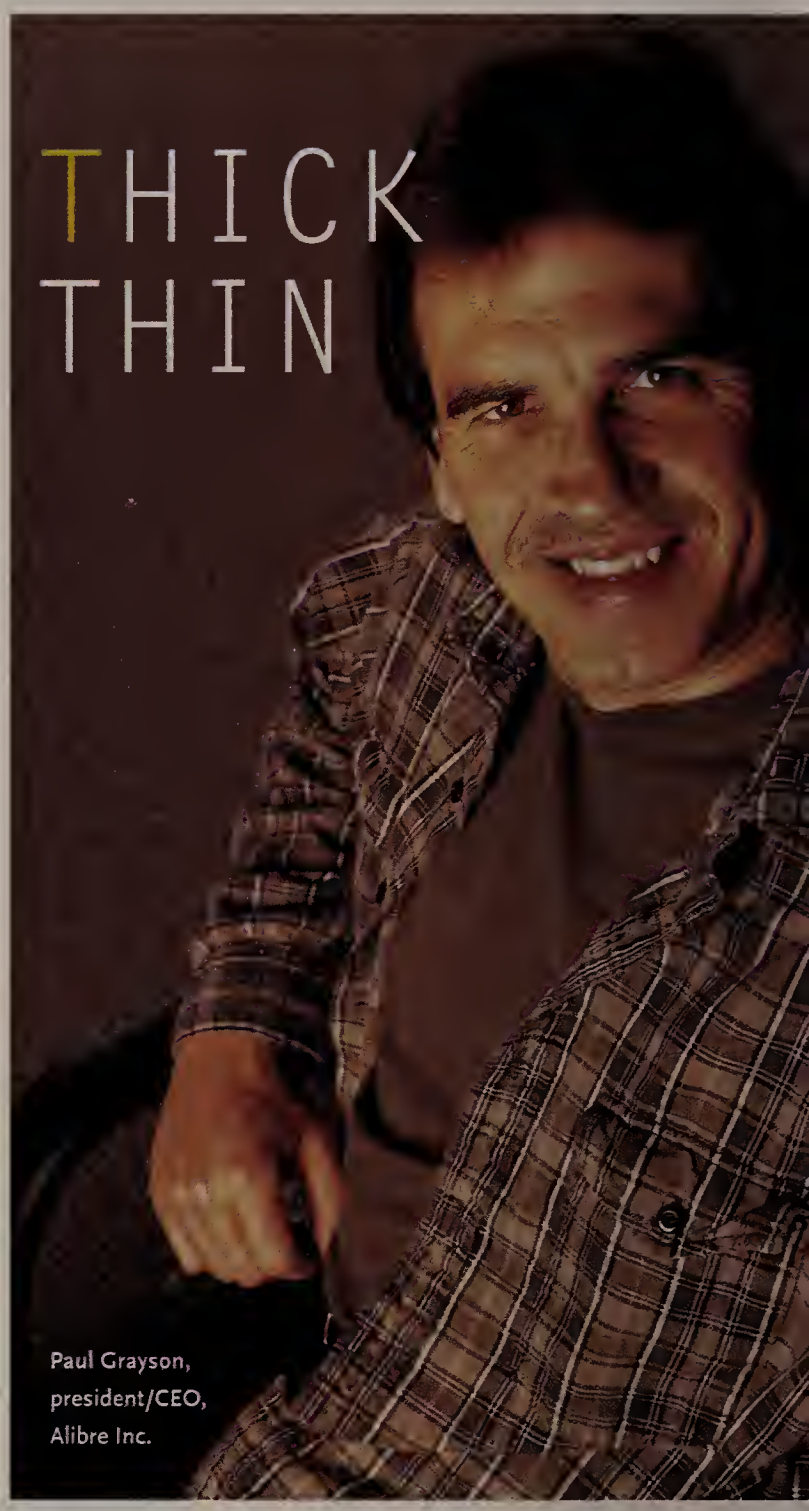
Caere describes OmniPage Pro as the world's leading optical character recognition (OCR) application. It enables users to convert static, scanned images into dynamic, computer-editable text for use in word processing and other text-based applications. With a scanner and an OCR application, users can essentially eliminate retyping printed paper documents. OmniPage Pro includes a new OCR engine that produces the highest level of accuracy among significant desktop OCR applications. The latest version includes new and enhanced features for improved format retention, ease-of-use and robustness, including voice readback of OCR results. Also included with the product is OmniPage Web Personal Edition®, Caere's pioneering paper-to-Web solution.

At this early stage, having the Windows 2000 certification gives Caere bragging rights and conveys a certain "cool factor" notes Miller. The real value over the long term will come as customers, particularly large organizations, recognize that OmniPage Pro 10 will be easy to deploy on Windows 2000. "Customers see it as a Windows stamp of approval."*

CAERE AND OMNIPAGE PRO ARE REGISTERED TRADEMARKS OF CAERE CORPORATION.

ALIBRE INC. | New features built in to Alibre Design™ take full advantage of the Windows® 2000 environment to help designers collaborate over the Web.

THROUGH THICK AND THIN



Paul Grayson, president/CEO, Alibre Inc.

WHY IS A WEB-BASED application service provider (ASP) sporting the Certified for Windows® 2000 logo? ASPs typically use thin clients, bulked-up temporarily by Java applets if necessary. But Alibre™ isn't a typical ASP. "We're a Web-based application, but we're not pure Java or a thin client. We use smart clients and benefit from a workstation-class computer on the desk," explains Paul Grayson, president/CEO, Alibre Inc., Richardson, Texas. The smart software Alibre requires on the Windows 2000 desktop is Windows 2000 certified.

BUILT TO SUIT

Alibre provides an architecture that benefits from the distributed nature of the Internet. Strategically aligned with Microsoft®, Alibre takes advantage of new technologies within Windows 2000, such as COM+ and the Active Directory™ Service. Alibre is also working closely with Microsoft to support Windows DNA (Distributed InterNet Applications Architecture) to foster design-team communication and data-sharing among engineers.

"Windows 2000 Server is more reliable and secure, and the Active Directory provides a secure framework to manage authentication of subscribers for our mechanical design service," Grayson continues. The result: Windows 2000 can scale to support any enterprise environment because it has the ability to upgrade servers and add processors to match the computational requirements of a given design project.

Alibre Design™, the company's Windows 2000 design solution, provides 3D solid modeling, which allows designers to create prototypes of products intended for manufacture. The company is aiming Alibre Design at small design and manufacturing shops. Users will run Alibre Design on a Windows 2000 Professional-based workstation and connect with the Alibre ASP site on the Web for additional services and for real-time collaboration. "Engineers can actually edit a CAD model in real time, not just view it or comment on it," Grayson notes. In addition, they can share data over the Web and manage dispersed teams.

ENGINEERING FROM THE GROUND UP

Although Windows 2000 certification is more demanding than previous certification efforts, the certification process has not hindered Alibre's development. "We have been working on this product for two years and took certification into consideration from early on. You don't want to wait until the end," says Grayson. The Windows 2000 certification requirements, he adds, "are like a roadmap to guide you in safe Windows[-based] development."

Specifically, the certification process significantly augments Alibre's internal quality assurance processes, due to

the extensive range of tests comprising the certification suite. Certification also ensures that Alibre Design will behave in the same way as any other certified application that a customer may be using, with no unwanted surprises. "The people who manage IT and users themselves will know what to expect when they use Alibre Design, and we are better able to support them since our application has been extensively tested," he explains.

IT organizations will also benefit from the new Windows 2000 install process. "Windows 2000 certification guarantees that the install and uninstall of Alibre Design conforms to the standards with no unexpected file replacement or deletion," explains Grayson. Windows 2000 Server also provides for centralized management and distribution of applications.

"Windows 2000 certification guarantees that the install and uninstall of Alibre Design conforms to the standards with no unexpected file replacement or deletion."
—Paul Grayson, president/CEO, Alibre Inc.

The Windows 2000 certification they have earned represents an important part of Alibre's strategy. "Our customers expect us to be Windows 2000 certified. It makes them feel comfortable," notes Grayson. IT and end users alike take comfort from the Windows and Microsoft Internet Explorer user interface conventions that are part of the certification specification, ensuring that Alibre Design is easy to use and intuitive. Similarly, certification guarantees that Alibre Design's functions in areas such as menus, number of mouse clicks, opening and closing the application, and other look-and-feel issues will be familiar to end users and to IT support. Finally, by conforming to the Windows 2000 standards for user accessibility, Alibre also made their product more accessible to customers with special needs.*

REID HORN

All applications seeking to earn the Certified for Windows® 2000 logo must pass the strict certification test administered by VeriTest, the leading independent software testing company with offices in Los Angeles, Paris and Tokyo. VeriTest makes all test results publicly available, including exceptions granted in the testing process and the reasons for those exceptions. You can view the past results, as well as an updated list of certified applications or applications well on the road to certification, by going to http://www.microsoft.com/windows2000/upgrade/compat/certified.asp.

EXECUTIVE SOFTWARE INTERNATIONAL INC.|
Diskeeper 5.0 sets a new standard for disk defragmentation utilities.

RAISING THE BAR

IT TOOK SEVERAL days to complete Windows® 2000 certification testing for Diskeeper 5.0, the disk defragmentation utility from Executive Software International Inc., Glendale, Calif. By comparison, less rigorous logo compliance for its previous Windows releases took about a day, recalls Andy Staffer, director of research. "The Windows 2000 certification process has hundreds of pages of test procedures and is much more rigorous," he concludes.

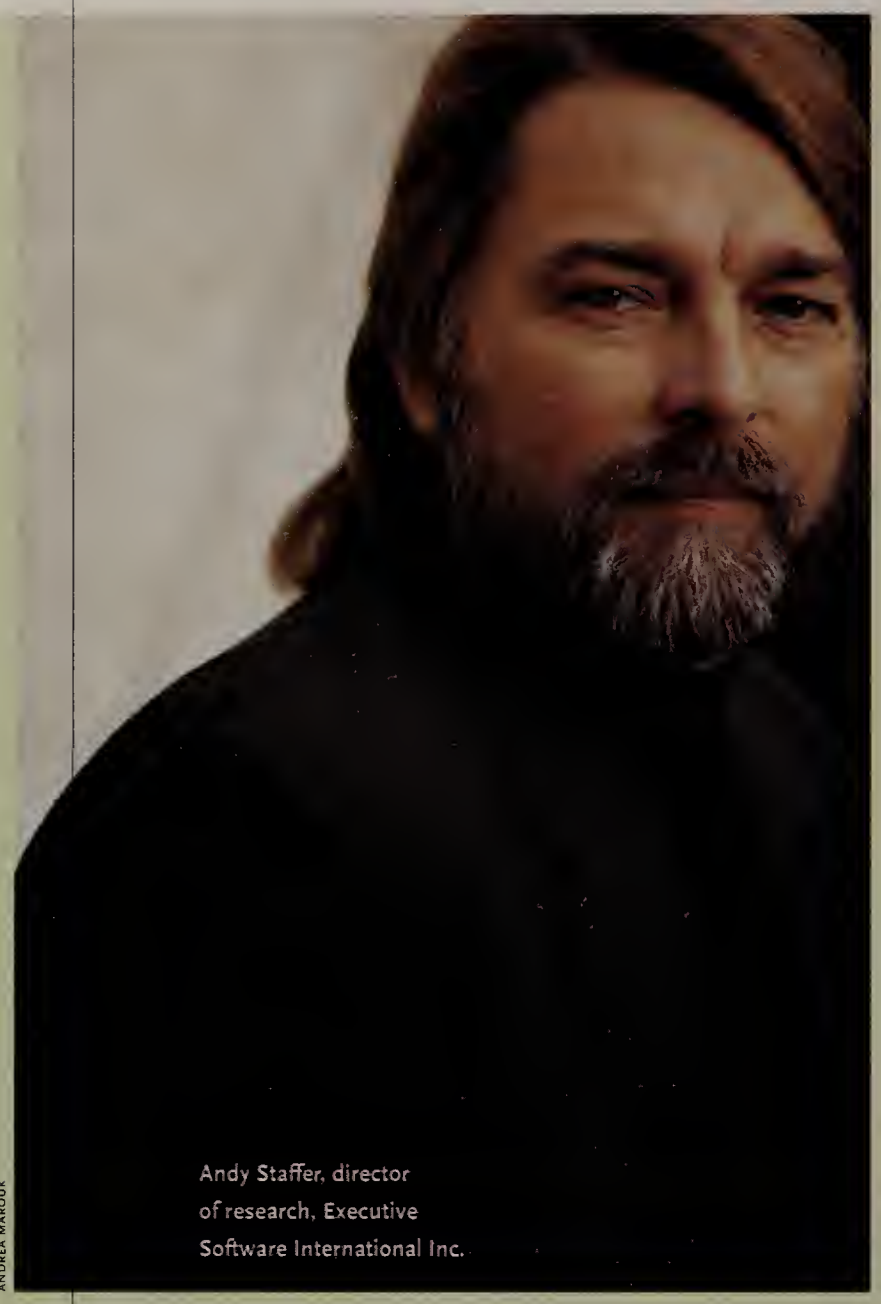
A HELPING HAND

But the extra effort is worth it. By following the certification specification, Executive Software ensured that Diskeeper 5.0 works for disabled users, which helps organizations comply with various government mandates to accommodate employees with disabilities. Previous releases of Diskeeper had built-in support for disabled users, but it wasn't consistent. "Because of the certification process, we had to look at every dialog box and make sure it worked for disabled users," Staffer explains.

"We take Windows 2000 certification very seriously."
—Andy Staffer, director of research, Executive Software International Inc.

Executive Software found the certification concept of Advertisement another big advantage. Advertisement posts notification of an application's availability, even if the application's files have not been installed on the system. The advertised application can then be deployed, using software management tools. This is an important consideration for IT organizations faced with deploying an application like Diskeeper across hundreds, or thousands, of desktops. "Advertisement can save systems administrators a lot of work," notes Staffer.

Complying with the certification process also helped Executive Software produce a better product for mobile users, for whom power management is a critical concern. "We totally tapped into the Windows 2000 power



ANDREA MAROUK

Andy Staffer, director of research, Executive Software International Inc.

management capabilities," Staffer reports. Diskeeper requires considerable power to complete a full defragmentation. Working with Windows 2000, Diskeeper 5.0 recognizes when there isn't sufficient battery power to complete a task and shuts itself down, preventing potential problems.

CERTIFIABLY CONFIDENT

Achieving Windows 2000 certification is important to the company. "It gives our customers a feeling of confidence in the product. It is a sign that the product meets very stringent quality standards," says Staffer.

Microsoft® agrees. "We are delighted to recognize Diskeeper 5.0 as the first utility to pass our Certified for Windows 2000 program," said Deborah Willingham, vice president, Business Enterprise Division, Microsoft Corp., in a company announcement. "By ensuring that their solution is as reliable and manageable as possible, this certification validates Executive Software's reputation as a provider of premier utilities for the enterprise market."

Diskeeper 5.0 for Windows 2000 is backward-compatible with earlier versions of Diskeeper and features three major technological breakthroughs: Frag Guard, a fragmentation-prevention technology; automatic scheduling and network controls for mixed Windows 95/98 and Windows NT/Windows 2000 environments; and online directory consolidation.

Overall, Executive Software feels that Windows 2000 certification has raised the bar of software quality, which is a clear win for both IT and end users. Quality is so important, in fact, that the company incorporated certification requirements into the earliest designs for Diskeeper 5.0. "We take Windows 2000 certification very seriously," Staffer asserts. Next on the company's agenda is to certify its undelete product for Windows 2000.*

continued from page 4

cation specifications when developing new applications."

WHAT A WONDERFUL WORLD IT WOULD BE

Encouraging the use of certified applications is exactly what Greg Dowling of Credit Suisse First Boston is planning to do for his organization and its installed base of some 15,000 PCs worldwide. Of the many aspects of certified applications that appeal to him, one of the most appealing is the Windows Installer service, which ensures the quickest and easiest deployment of corporate applications.

At Credit Suisse First Boston, it is not unusual for IT to release 30 or more software modifications in a single week to support the very dynamic nature of the investment bank's core businesses. IT had to find a way to manage this chore while keeping the operating system stable, and without breaking the bank with numerous special modifications of each upgrade to ensure stability.

> **"[With a certified application] ...We know we can install it and maintain it in our NT environment without trampling on the rest of the environment. So we feel quite strongly that we don't want to buy software that doesn't obey these standards."**
> *—Greg Dowling, Managing Director, Credit Suisse First Boston*

How well does Dowling anticipate the Windows Installer will work for him? "We look forward to a world where all applications are installed using the Windows Installer service, where all the problems we typically have today where applications are interfering with each other, and preventing each other from working properly, will go away," he says. "That's where we want to be." *

Bill Laberis is president of Bill Laberis Associates and former Editor in Chief of Computerworld.

GEMPLUS S.C.A. | Lowering training and support costs for users were top priorities for Gemplus® as they pursued their goal of Windows® 2000 certification.

SMART SOLUTIONS

Is there a smart card in your future? If you use a cellular phone, you probably have a smart card tucked into your phone now, or will in future. In 1999, Gemplus® made 500 million smart cards, which were used primarily in mobile telephones. And the numbers are only going up. The company is an independent hardware vendor, which builds Windows® 2000-certified software into its smart card products.

Gemplus® S.C.A., Redwood Shores, Calif., is the world's leading provider of plastic and smart card-based solutions, according to Dataquest. Founded in 1988, Gemplus has successfully implemented portable and secure smart card-based solutions to simplify a wide range of applications ranging from public and wireless communications to electronic business.

A SECURE FUTURE

For Windows 2000 users, smart cards will play a key role in network security. As network-based activities such as electronic business expand, the demand for a secure environment increases. In order to address these security demands, various network security systems have been developed based on a Public Key Infrastructure (PKI), which is considered the standard for secure distributed applications.

GemSAFE™ Enterprise, the company's Windows 2000 Professional-certified solution, addresses PKI security concerns by enhancing a corporate PKI implementation. GemSAFE Enterprise is a desktop solution that adds portability and ease-of-use to network security by tapping the inherent benefits of smart cards to provide more reliable authentication of the user. In addition, GemSAFE Enterprise sets the stage for future smart card applications beyond network security, explains Scott Smith, director/product management and marketing at Gemplus.

As a Windows 2000 product, GemSAFE Enterprise had to meet the demanding certification specification. "It required some extra work to meet all the requirements for install, uninstall, [and] power management, but it paid off," concludes Smith. For instance, the new remote installation and management capabilities built into GemSAFE Enterprise benefit system administrators. Similarly, self-repairing installations make the install process more reliable. Previously, Smith notes, problems resulted from incorrect and incomplete installs. "When users are using products with incomplete installations, who knows what will happen? Through certification, we eliminate this problem," he explains.

TCO: HOW LOW CAN YOU GO?

Certification has particularly improved the remote install process. "For administrators to install our components remotely is an important feature for us and helps us remove objections during the sales process," explains Smith. Certification addresses remote installs through the required MSI file, which describes how the product will be installed remotely. "This is important because GemSAFE™ Enterprise Workstation is supposed to run on the client, which often requires remote installation," he continues. Because of the remote installation capabilities of Windows 2000, a user can install Gemplus smart-card reader hardware while the software is installed and supported remotely by an administrator. This capability, he expects, will be very important to users and can save administration and IT time when adding new devices.

Windows 2000 Professional's power management is another benefit for Gemplus customers. GemSAFE Enterprise is a security application. IT managers need the reassurance that security will not be compromised when a machine goes into power-management mode. "The certification process ensures we support power management features and operate correctly," Smith reports.

"Certification means the software will be well-behaved, particularly in terms of correct and complete installation."
—Scott Smith, director/product management and marketing, Gemplus S.C.A.

Customers will benefit immediately from the consistency of behavior found in certified applications. "Certification means the software will be well-behaved, particularly in terms of correct and complete installation. It is not, however, a quality test. Quality is our responsibility," Smith insists. But the certification

specification, he adds, helps the internal quality assurance effort by providing another checklist and third-party testing.

Ultimately, both IT and users will benefit from GemSAFE Windows 2000 certification. Smith concludes: "By focusing on the certification process, we have added features to our product that help organizations lower cost of ownership through remote installation and a consistent look and feel, which reduces training and support costs." ✱

Certification Momentum

The following companies have applications that are well along the path to Windows 2000 certification:

- Agresso Group ASA
- Argent Software Inc.
- BMC Software Inc.
- Citrix Systems Inc.
- Damgaard A/S
- FastLane Technologies Inc.
- FileNET Corporation USA
- Gemplus S.C.A.
- Lane System Solutions
- Logility Inc.
- Mission Critical Software Inc.
- Motiva Software Corporation
- Navision Software A/S
- NetIQ Corporation
- Pivotal Corporation
- pragma Systems Corporation
- Scala Business Solutions
- TIDAL Software
- Trend Micro Inc.
- VERITAS Software

DAMGAARD A/S | In the highly competitive world of ERP applications, Damgaard aims to be the top choice.

FUTURE PROOF

DAMGAARD A/S, Copenhagen, Denmark, needs the best product it can deliver if it is to thrive in its chosen market segment: the hotly contested enterprise resource planning (ERP) segment. By meeting the Windows® 2000 certification requirements, the company has been able to bolster AXAPTA®, its ERP solution for midsize companies, in several critical ways.

Damgaard's AXAPTA is designed for multinational companies that need a flexible way to standardize their worldwide operations. AXAPTA is an integrated enterprise solution covering finance, supply-chain management, customer relationships, logistics, project management and manufacturing — all of which can be accessed via the Internet, third-party products, or custom-built applications.

EYES ON THE PRIZE

Windows 2000 certification assures IT managers that AXAPTA will continue to support the industry's new directions in the future. Damgaard, which prides itself on staying on the cutting edge of technology, has closely followed Microsoft®'s lead in technology. "We see Microsoft as headed in the right direction for the future," explains Daniel Bévort, strategic alliance coordinator. Being the first ERP product to achieve Windows 2000 certification confirms the company's commitment to advanced technology and its confidence in the Microsoft strategy.

Among the other benefits of AXAPTA's Windows 2000 certification is that "the IT organization will gain from the standardized deployment provided through Windows 2000," notes Bévort. Although ERP solutions can be notoriously difficult to install, IT will experience a simplified, consistent AXAPTA installation that follows the stringent Windows 2000 install requirements. "The entire installation procedure is more consistent, stable, and controllable. Files, for example, can only be written to certain places," he adds. Because of its built-in support for Windows Active Directory™, IT will also gain from centralized management of the application.

Another benefit from Windows 2000 certification that will prove popular with IT and end users alike, Bévort continues, is the new standby mode. "This provides a very fast way to effectively shut down, and then bring back, the application," he explains. Previously, IT has absorbed the brunt of user complaints about slow shut-down and start-up.

Windows 2000 certification also means that IT will see results from correct maintenance of user preferences and computer settings for people who use several computers. It will also be easier for IT to support multiple users per computer. Windows 2000 certification standards allow AXAPTA to run in a tightly controlled network environment, which lets network administrators secure and manage corporate desktops. Finally, the consistent user interface and accessibility standards required by the certification standards reduce IT's support burden and lower training costs.

As a result of all these changes, Damgaard expects Windows 2000 certification to reduce the total cost of ownership for a product like AXAPTA. "The improved manageability and installation means that it will be much easier for IT to roll out the application to hundreds of users," Bévort says. Easier installation and manageability mean fewer IT resources are required, which translates directly into a lower cost of ownership of the product.✱

AXAPTA IS A REGISTERED TRADEMARK OF DAMGAARD DEVELOPMENT A/S.

WRQ INC. | When your job is to show your customers what their computers have inside, you had better provide a clear picture.

MIRROR, MIRROR

JOHN E. HOLLINGSWORTH

Sue Lindsey, WRQ Reflection marketing manager

WINDOWS® 2000 certification was high on the WRQ agenda. The Seattle, Wash.-based company provides Windows®-based terminal emulation software, WRQ Reflection®, which allows Windows-based desktops to connect to mainframes. The software runs on Windows 95, Windows 98, Windows NT®, and now on Windows 2000. "We offer connectivity software, and our customers expect that it will work right," says Sue Lindsey, WRQ Reflection marketing manager. Certification helps ensure that it will.

WRQ Inc. customers use WRQ Reflection to provide connectivity between PC desktops and host systems such as IBM mainframes and AS/400s, HP 3000, UNIX, OpenVMS, and Xsystems. Windows 2000 certification reassures IT managers that the WRQ product will behave properly in the Windows 2000 environment as it delivers reliable terminal emulation and connectivity between the PC desktops and their host systems.

RELIABILITY AND MANAGEABILITY

By meeting the Windows 2000 certification specification, WRQ was able to add features that both Windows users and IT recognize and appreciate. For example, by using the Microsoft® Windows Installer within WRQ Reflection, the company was able to create an installation program that is easily recognizable to many Windows users. The benefits of consistency go beyond familiarity: they allow WRQ to deliver a product that does not require additional training for users, resulting in a lower total cost of ownership of the product.

Microsoft also recognizes the importance of WRQ's host connectivity. "Organizations want to know that their Windows 2000 environment will be interoperable with their current host systems," says Deborah Willingham, vice president, Business Enterprise Division, Microsoft Corp., commenting on WRQ's Windows 2000 certification. "WRQ has acted quickly to take advantage of the great technologies in Windows 2000. WRQ Reflection has passed the Certified for Windows 2000 Specification, and our joint customers can be assured of a reliable, manageable solution."

WRQ Reflection for HP 8.0 host access software, which will ship in February, 2000, is the first product in the WRQ Reflection® 8.0 suite to receive the Windows 2000 certification. WRQ Reflection 8.0 includes the Active Directory™ Service, Windows Installer, fully integrated Visual Basic® for Applications (VBA) 6.0, and centralized management tools. WRQ Reflection 8.0 will also support previous versions of Windows including Windows NT 4.0, Windows 98 and Windows 95.This means users can access mission-critical information

"We offer connectivity software, and our customers expect that it will work right."
—Sue Lindsey, WRQ Reflection marketing manager

stored on host systems from all Windows operating systems, according to WRQ.

MORE THAN A PRETTY FACE

Terminal-emulation, or host-access, software may not be the most glamorous application, but it is vitally important, Lindsey explains. Using a Windows 2000-certified product such as WRQ Reflection means that IT can be confident that the terminal emulation product on the PC desktop will behave properly, allowing IT to concentrate on back-end systems.

In the fast-moving connectivity market, being first-to-market with a new feature, especially one as significant as Windows 2000 certification, is an advantage. Customers and IT will appreciate the extra attention to detail, such as easy install and remote management, which certification represents. They will also benefit from the third-party testing and independent assessment that augments the normal quality-assurance work routinely performed by WRQ. "The certification," Lindsey concludes, "gives IT and end users a clear sign that WRQ has done the work necessary to ensure our products will work as expected."*

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PTC | Enhanced mobility and simplified management are key components in PTC's Pro/DESKTOP™ 2000.

TAKING IT WITH YOU

FACED WITH A CLEAR shift to Microsoft® Windows® among its customer base, PTC, based in Waltham, Mass., regards Windows® 2000 certification as a must-have requirement. "It is viewed as a sign that the product has a certain level of quality," explains Dan Starr, PTC director of strategic marketing. Certification gives both IT and end users a greater level of comfort. They are reassured through the certification program's independent testing that the product has met stringent requirements.

ENHANCED DESIGN

PTC's first Windows 2000-certified product is Pro/DESKTOP™ 2000, a tool that enables conceptual engineers to capture ideas rapidly and to explore design possibilities. With Pro/DESKTOP, engineers can start work in 2D and the corresponding 3D design transparently evolves, while automatically leveraging 100 percent of the design intent. Conceptual designs created with Pro/DESKTOP are then passed to Pro/ENGINEER®. Pro/ENGINEER is the de facto standard for mechanical design automation and is based on PTC's parametric, feature-based, fully associative architecture.

By meeting the Windows 2000 certification standard, PTC has enhanced Pro/DESKTOP in a number of ways that directly benefit both the IT organization and end users. For example, the Windows 2000 Installer provides a robust self-repairing installation process, "enabling Pro/DESKTOP applications to be more reliably installed on workstations, PCs, and notebooks that already have many other previously installed applications," notes Starr. This ensures that IT will be able to deploy the application easily and efficiently on dozens, even hundreds, of desktops, allowing the organization to collect direct input from more people during product development.

BOOSTING PRODUCTIVITY

Specifically, the new Windows 2000 installation requirements specify how applications must treat shared software components, such as Dynamic Link Libraries (DLL). Since Pro/DESKTOP meets the new installation requirements, IT managers are assured that installing Pro/DESKTOP will not create problems with previously installed software, Starr adds.

Similarly, the Multiple Monitor support in Windows 2000 also provides needed support for new hardware, enabling engineers to more easily visualize large complex designs in Pro/DESKTOP. This will increase designer productivity, ultimately boosting the organization's return on its investment in Pro/DESKTOP.

Finally, Windows 2000 improvements to power management and plug-n-play "promise to make mobile platforms more practical for both Pro/DESKTOP and Pro/ENGINEER," Starr continues. Engineers and designers will no longer be restricted to working at their desktops, but will be able to run their design tools on a laptop anywhere, making them more productive.

The easy installation and enhanced mobility achieved through Windows 2000 certification create that many more opportunities to extend the design process to more people in more places. For Pro/DESKTOP 2000 users, Windows 2000 certification means easier deployment, greater manageability, and higher productivity. *

Alan Radding is a technology writer based in Newton, Mass.

Enterprise systems . Thomas Davenport

ERP: STILL ALIVE IN THE INTERNET AGE

Over the past decade, two major innovations have transformed the way companies build and operate information systems: the Internet and its associated e-commerce technologies, and enterprise resource planning (ERP) systems. With all the attention being paid to e-commerce, some may feel that ERP is RIP. However, ERP is as necessary as it ever was and simply needs to evolve to thrive in the Internet age.

The basic functionality of ERP and the 'Net are different. ERP is an integrated transaction-processing system that handles businesses' internal information. The 'Net is fundamentally a distribution medium and doesn't involve a lot of processing. Of course, the information flowing through the 'Net is becoming more amenable to processing all the time, with advances like Java and XML. But it's still processed by applications, and the best business applications are still enterprise packages from major vendors.

The great benefit of ERP is integration. If you add a new sales order to the system, everything related to the order also changes, including sales commissions, inventory requirements, manufacturing schedules and the balance sheet. With ERP-enabled integration, all employees can use the same information and business processes and get the same results when the system is queried.

Of course, there are exciting point-specific applications with a strong Internet orientation. In procurement, for example, you could argue that 'Net-centric applications from firms such as Ariba are as good as, or better than, those from mainstream enterprise system vendors. But all is not lost for ERP even here. E-procurement vendors have alliances with ERP vendors and are happy to let customers interface their systems with the broader applications suites that pull together different kinds of information.

More importantly, point-specific e-commerce applications will not be able to achieve information integration within companies in the foreseeable future. Even if there were equivalents to e-procurement systems in finance, manufacturing and other areas, how would they all fit together? 'Net-based applications tend to come from start-ups, which have little incentive to integrate their information with e-applications from other firms.

Integration with ERP has never been easy to achieve, but it's generally worth the trouble. The integration allows firms to offer services such as available-to-promise inventory, which means that customers don't order something that can't be delivered in time. If procurement systems aren't integrated with sales, manufacturing and logistical systems, available-to-promise is just a tantalizing mirage. A lot of e-commerce firms, despite their highly Web-enabled applications, just can't do it.

In the end, e-business is business, e-commerce is commerce. The virtues of ERP will prevail for a long time to come.

Davenport is director of Anderseu Consulting Institute for Strategic Change and a professor at Boston University and Babson College. He is the author of Mission Critical: Realizing the Promise of Enterprise Systems, *to be published in March. He can be reached at thomas.h.davenport@ac.com.*

Speaking the LANguage . Linda Musthaler

NEW BREED OF LEGACY-FREE PCS IS EASY TO LOVE

A lifetime ago in the mid '80s, I helped set the desktop computing standards at Johnson Space Center. One top requirement was that all PCs be IBM-compatible. What this really meant is that the PCs had to adhere to all internal architectural standards that IBM had defined with its original PC. Now, two decades after the start of a phenomenal personal computing revolution, the venerable ISA bus standard and its companions known as serial and parallel ports may be pushed into well-deserved retirement.

We're entering a new era of desktop computers, which leaves behind the limitations of technology developed 20 years ago. Spooked by the threat of easy-to-use Internet appliances, Intel, Microsoft and their industry partners are fighting to preserve the life of the de facto corporate standard, the Wintel PC. The plan is to ditch the old internal buses and I/O ports in favor of newer, faster, easier-to-use buses and ports based on the standards of Universal Serial Bus (USB) and IEEE 1394, also called FireWire.

PCs that use the USB standard for connecting peripherals became available a few years ago. Coming to market now are new commercial desktops with USB as the internal bus. This is a milestone in the PC industry, as it leaves behind all the legacy devices from the original IBM-compatible era. Intel calls this legacy-free machine the Easy PC, and it's time we business users embrace this new direction.

The object of the legacy-free PC is to create a more stable, less costly computing device by removing the ancient hardware components — network adapters, modems, general-purpose I/O cards and so forth — that share slow, complicated interfaces. Most of these devices have been redesigned to take full advantage of the faster speed and capabilities of USB or FireWire.

New types of devices are being built around the Easy PC specifications. For instance, Compaq is shipping its iPAQ legacy-free and legacy-light PCs. For users looking to make a clean break from the past, the legacy-free PC doesn't sport a parallel or serial port, or ISA or PCI expansion slots. The legacy-light PC has a serial and a parallel port, for those who want to continue to use existing peripherals.

But this isn't about peripherals and whether or not we can use old ones that are still lying around. It's about making the device less expensive, easier to use, and more stable and manageable. Without all those complicated internal ports and devices fighting for resource allocations, the PC becomes, well, easy.

The Easy PC also is about focusing on the Internet as the PC's major use. Keeping in mind that content is king, these new devices focus on easier ways to get to your desired content. For example, there are special buttons that take you directly to your company intranet or to specific tasks such as e-mail.

But unlike an Internet appliance — which is strictly for accessing the 'Net — an Easy PC runs at least one version of Windows, so you can run all your normal office applications, such as word processing and presentation graphics. Users won't be sacrificing anything except slow, obsolete interfaces to old peripherals.

Do you need a selling point for your management to take an interest in an Easy PC? What about price? An iPAQ retails for as little as $499, and other manufacturers will enter the fray soon. Companies also should see substantial savings in support costs because the devices are simpler inside and out, and thus more stable. Manageability is built right in, with asset tracking and security, fault notification and recovery, software deployment tools and other management features.

You can find out more about Intel's Ease of Use Initiative at www.intercast.de/technology/easeofuse/over.htm. Just for grins, take a look at the Concept PC Gallery, to see the form factors some of these devices could take. (Imagine a PC that looks like a bonsai tree sitting on your desk.)

Microsoft, too, has information from an operating system standpoint on its Web site. As you formulate your plans to deploy Windows 2000, be sure to factor in how you might transition to an array of these next-generation PCs.

If it lives up to its name, the Easy PC should be the greatest thing to happen for corporate computing since the first generation of PCs. Simple. Cheap. Powerful. It just doesn't get any better than this.

Musthaler is vice president of Houston-based Currid & Company, a technology assessment and consulting firm. She can be reached at linda@currid.com.

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How to create a killer job ad

BY BONNY GEORGIA

Why aren't your job listings attracting the top-notch IT talent your business so desperately needs? Perhaps your ads are so boring they get lost in the shuffle. Maybe they're not informative enough to encourage a reply. Even worse — they could be both. Here are some examples of what to do and what not to do in a job ad.

DO:
When you're competing against dozens of similar job listings, it's not enough to list your company name and the position you're try ing to fill. A snappy and relevant headline will pique people's interest and encourage job seekers to read more about what you have to offer.

DO:
Graphics, boldface and specialty fonts help grab a reader's attention, but use too many and your ad will look cluttered. Color graphics and photos are great if you can afford them, but simple black and white images also work to draw the eye and dress up your message.

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Qualified applicants will have:

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- Outstanding deductive reasoning and troubleshooting skills.
- B.S./M.S. in Computer Science or related field preferred.

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Qualified candidates don't delay. Please direct your résumé and cover letter with salary requirements to No-Name Media, Human Resources, 123 Anywhere Street, Needham MA 02494; e-mail jobs@no-namemedia.com; fax: (978) 555-1212.

For information about our clients, a list of company benefits and more job listings please visit our Web site, www.no-namemedia.com. We are an equal opportunity employer.

DON'T:
These sections neglect to men tion the day to day responsibili ties for either position being offered. Strive for balance between highlighting your needs and telling potential new hires what they'll get in return for their efforts. The more you can tell them what's in it for them, the better.

DO:
Corporate culture is the largest intangible benefit your employees receive, so flaunt your finer points whenever possible. Painting a clear picture of your culture will also help screen out individuals that won't fit in at your firm.

DON'T:
This ad lacks specific salary information, and the fringe benefits listed are unre markable. If your company offers unique perks, such as a health club, child care, tuition reimbursement, casual dress or summer hours — now's the time to say so.

DO:
The more response mechanisms you put in your ad, the more likely you'll get a timely response from interested parties.

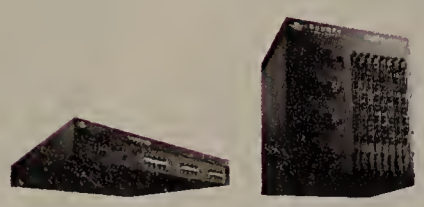
DO:
Use your Web site to share company back ground information and details about the job that you can't afford to put into your print or online advertisement. It's also a good idea to offer a Web based reply form so applicants can quickly submit their résumé for review.

Georgia is a freelance writer based in Hudson, Mass. She can be reached at bonny@wordsatwork.net.

Contributors

Tips from Kelly Caldwell, HR consultant in Chicago; Melanie Griffin, director of customer support for Dice.com in Des Moines, Iowa; Joyce Poggi Hager, vice president of HR at NetScout in Westford, Mass.; and Darcy Hall, Beth Furman and Jim Darroch with HR communication agency ASRI.com in Waltham, Mass.

heavy loads are no big deal



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FOUNDRY NETWORKS

The Electronic Commerce Issue

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Signature SIGN-OFF

SOUND THE E-BUGLE

"Dot-com" has become the reveille for our new millennium, and you, the network executive, must lead the battle charge. This is a natural fit. All important business data, from signatures to bids, have become packets. Who better to oversee their delivery, usage and security than the people who most understand this technology?

The prize is clear. In the next few years, we will see the supply chain become entirely digital — Webified, to use the jargon. Business customers will place orders over the Web. In turn, those orders will trigger bids, delivered via the Web, from raw materials suppliers. Then consumers will buy finished goods via the Web.

Yet the path to get your company from here to there lies largely in the fog. As usual, the technology available today often can't help you create truly integrated, end-to-end e-commerce systems. New technologies must also mature to fill the gaps currently occupied by paper.

In the next few years, you will build Web systems that verify the delivery of signatures over the Web; enable groups of businesses to buy, sell and auction among themselves; and you will stitch these new systems together with legacy data. In short, you will build and occupy an entirely networked territory.

In this, our second annual Electronic Commerce Issue, we give you analysis of the products, training and management skills you'll need to succeed. We also showcase the e-commerce battle plans of other enterprises. One in particular, this year's E-comm Innovator Award winner, shows how a large traditional company can take on the young, iithe dot-com companies by building end-to-end systems. When taps sounds, it will signify the death of the paper-trail era.

Julie Bort
Senior Editor, Signature Series
jbort@nww.com

E-COMM ONLINE

Visit our special Network World Fusion minisite (www.nwfusion.com/ecomm2000) for more on conducting business-to-business e-commerce. You'll find:

Expert advice: E-commerce sage Theo Forbath, a director at Northeast Consulting, will answer your tough e-commerce questions in a hosted forum running until March 3. **DocFinder: 7035**

An interactive Buyer's Guide. Compare dozens of e-commerce catalog servers with the click of a mouse. **DocFinder: 7036**

Tales from the e-crypt: We tell our e-commerce horror stories and invite you to share yours. **DocFinder: 7033**

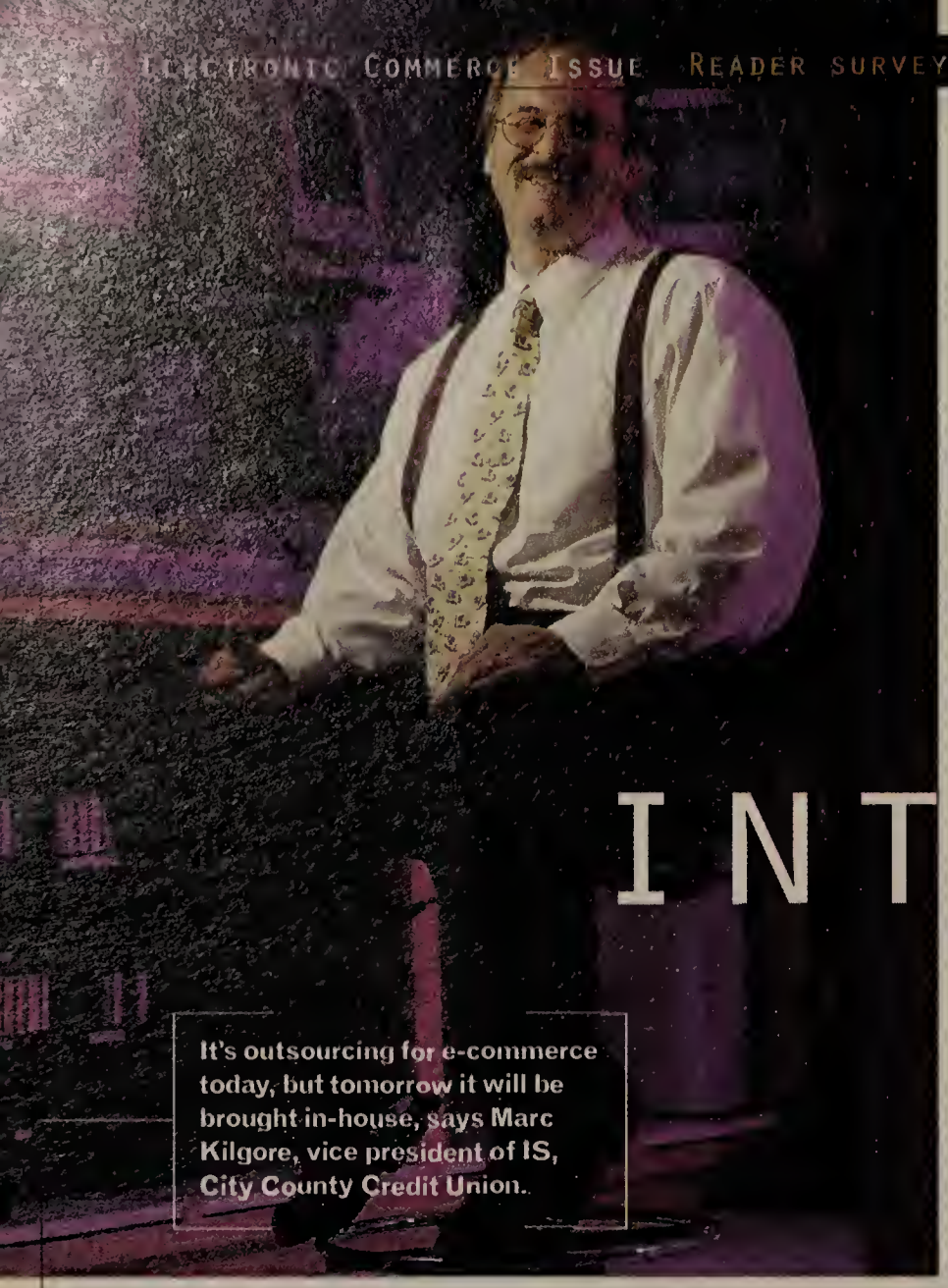
A face-off: Broadvision and Open Market face off over personalization technologies. Jump in with your questions. **DocFinder: 7037**

Audio snippets: The American Express, Ernst & Young and Staples.com executives who participated in our e-commerce roundtable speak on e-marketplaces, security and other e-commerce essentials. **DocFinder: 7031**

Statistics: See what reader survey data we've culled on e-commerce transaction processing, application availability and other metrics. **DocFinder: 7032**

THE SIGNATURE SERIES

The Electronic Commerce Issue is one of six bimonthly supplements providing insights, opinions and information on the biggest trends shaping the networked world. Look for our annual analysis of network vendors in the next installment, The Network World 200 Issue, coming April 24.



It's outsourcing for e-commerce today, but tomorrow it will be brought in-house, says Marc Kilgore, vice president of IS, City County Credit Union.

A survey of *Network World* readers reveals a propensity for going it alone on e-commerce initiatives.

E-COMM INTELLIGENCE REPORT

BY DOUG BARNEY

When it comes to e-commerce, you're take-charge folks, and banking your companies' futures on it — even if it means plunking down hundreds of thousands of dollars.

Nearly 25% of respondents to our e-commerce survey expect to spend no less than $1 million on e-commerce initiatives. Another 28% will spend between $100,000 and $500,000. Clearly e-commerce is becoming a bet-your-business strategy, as we've discovered from 100 *Network World* readers who participated in the survey, conducted by Enterprise Management Associates, in Boulder, Colo.

But the burgeoning Web hosting community clamoring to get your e-commerce dollars shouldn't get too excited. It seems many network managers plan on keeping e-commerce to themselves. Nearly 75% of respondents said they develop their own e-commerce applications using home-grown tools. Another 40% use off-the-shelf application development tools.

And what's developed in-house stays there. The majority of respondents — 79% — host e-commerce applications in-house.

Those who rely on a Web hosting service prefer using servers provided by the outsourcing firm rather than deploying their own equipment at the external site. Either way, e-commerce managers who have opted to host Web applications externally said they've done so because they can make their applications more secure, get better performance and spend less money than if they implemented them in-house.

How much are these firms spending on hosting? Less than $5,000 per month gets nearly 67% of respondents a hosted e-commerce application.

Now, but not forever

While our survey shows that readers favor in-house e-commerce development and support these days, that may not be the case in the future. That's how Chris Calabrese, a net-

E-COMMERCE ENGAGEMENTS

The majority of the 100 *Network World* readers who participated in our recent e-commerce survey consider IP-based e-commerce business-critical. Here's a look at how they're using it:

Top business functions supported?*

- 62% Product marketing
- 46% Product sales to other businesses
- 45% Product purchases from other businesses
- 44% Sales of services to other businesses
- 40% Sales of services to consumers
- 36% Product sales to consumers
- 29% Purchase of services from other businesses

* Multiple responses allowed

Source: *Network World*/Enterprise Management Associates

Does your e-commerce application integrate with the corporate shipment/fulfillment system?

- 25% Currently integrates
- 35% Within 12 months
- 33% Will not integrate
- 7% Not applicable

. . . supplier fulfillment systems?

- 19% Currently integrates
- 39% Within 12 months
- 33% Will not integrate
- 9% Not applicable

. . . the corporate accounting system?

- 22% Currently integrates
- 29% Within 12 months
- 42% Will not integrate
- 7% Not applicable

Find it online: www.nwfusion.com

More statistics: See additional survey data on e-commerce transaction processing, application availability and other metrics.

DocFinder 7032

STEVEN WOLF

E-COMM SPENDING

Here's a look at how the 100 *Network World* readers recently surveyed on e-commerce activities have budgeted for those projects.

E-commerce budget for 2000:

- **24%** $1 million or more
- **11%** $500,000 to $1 million
- **10%** $200,000 to $500,000
- **7%** $100,000 to $200,000
- **8%** $50,000 to $100,000
- **6%** $25,000 to $50,000
- **10%** Less than $25,000
- **24%** Other

Source: *Network World*/Enterprise Management Associates

THE WHY OF E-COMMERCE HOSTING

Top reasons for outsourcing e-commerce applications to Web hosting firms.*

- **58%** Speed of implementation
- **54%** Lower cost
- **54%** Better security
- **46%** Better performance
- **42%** Lack of in-house skills

* Multiple responses allowed
Source: *Network World*/Enterprise Management Associates

work security analyst for a managed health care firm, sees it. He says his company built its business and consumer e-commerce applications, but is now looking at outsourcing.

Likewise, some folks who have outsourced don't plan to do so forever. The Orange County Transportation Authority, for instance, is looking to move some e-commerce operations in-house. Through its e-commerce site, this California agency posts requests for proposal and accepts bids. An outside firm, ThirdWave, developed the application using Microsoft Active Server Pages running on Microsoft's Internet Information Server.

"ThirdWave is under contract for a year to provide support. In that time, our staff will get to know how it was written and get familiar with it so we can carry on after the warranty expires," says Joe Tiernan, IS planning analyst with the agency.

Ditto for City County Credit Union in St. Paul, Minn. "We have a dedicated connection to [outsourcer Virtual Financial]. We wanted to get our feet wet without the support headaches," says Marc Kilgore, vice president of IS for the credit union. "I certainly see the day when we will bring it in-house."

Eyeing e-comm performance

In-house or outsourced, e-commerce applications are closely watched. E-commerce managers who outsource demand accountability from Web hosts. Nearly 80% of respondents who are outsourcing have signed service-level agreements, and 75% said they are able to monitor the performance and availability of their e-commerce applications at the Web host. More than three-quarters of those respondents receive daily, weekly or monthly historic reports, while 17% receive real-time statistics.

Managers who keep e-commerce operations in-house said server and application availability are at the top of their lists. Key metrics are usage of database, memory and other resources; transaction processing time and rate; service failure; and user response time. On the latter, 40% of respondents considered user response time a primary indicator of how successful their sites will be.

Most aren't leaving anything to chance. Two-thirds of respondents have taken special measures to ensure high availability and performance. Those moves include deployment of load-balancing products for 71% of respondents, redundant servers with failover capability for 49%, caching for 36% and use of multiple sites for 17%.

Given these efforts, it should come as no surprise that two-thirds of respondents rated e-commerce applications as strategic to their companies today. While 28% ranked those initiatives as "important," 17% said they're "critical" and 19% called them "absolute."

The fact is, 46% of readers surveyed have already implemented business-to-business e-commerce systems, and 19% are conducting business-to-consumer e-commerce. One-third of respondents said they're managing both types of e-commerce activities. For nearly three-quarters of respondents, those activities have been going on for at least a year, if not two.

Still, a surprising 29% of respondents indicated that e-commerce applications are only moderately important today.

Maybe that's because some haven't quite decided how to handle e-commerce. Such is the case for David Samonds, IT manager for Solideal North America, which sells industrial tires. Until Samonds hears what e-commerce software the home office in Belgium standardizes on, he is limited to running a Web site offering product descriptions and a form for submitting questions. "At first for us, e-comm will be for allowing existing customers a quick entry point for orders," Samonds says.

Another survey respondent, David Chivatero, IT specialist at Consolidated Electrical Distributors, a marine electronics distributor in Westlake Village, Calif., is basically in the same boat. The company's products are so specialized that it only recently felt the need to post information about them on the Web. Chivatero figures an honest-to-goodness e-commerce initiative is at least two years away.

Even respondents in the earliest stages of e-commerce have laid the foundation for more. While two-thirds of respondents use their sites to market information, almost half also use e-commerce to buy wares from and sell products to other businesses. It all goes to prove — we're building electric companies. ■

Windows NT: The big fish

No matter how far along you are in developing e-commerce plans, chances are you've got one thing in common with your peers — Microsoft.

Our recent survey shows that more than three-quarters of respondents use Windows NT to support e-commerce services. Second place isn't even close, with runners-up including HP-UX, IBM's AIX, Red Hat Linux and Sun Solaris (see below).

NT appears to rule the e-commerce roost for a couple of reasons. For one, the operating system includes a Web server (Internet Information Server) and an authoring tool (FrontPage). These applications are integrated and, of course, free.

Perhaps more importantly, most surveyed already run Microsoft shops. Adding Microsoft software for e-commerce is cheaper, less trouble to manage and easier to integrate than another package would be, respondents said. Besides, in-house programmers already are trained on Microsoft systems. In fact, 50% of respondents said they use Microsoft's e-commerce server software.

Additionally, one-third of the responses were divided among IBM, Apache Group and Netscape e-commerce server software.

— Doug Barney

E-COMMERCE OPERATING SYSTEMS

Operating systems used for e-commerce deployments.*

Operating system:

- **77%** **Windows NT**
- **51%** **Unix**
- **17%** HP-UX
- **17%** Sun Solaris
- **13%** IBM AIX
- **4%** Other Unix
- **10%** **Linux**
- **7%** Red Hat
- **3%** Other Linux
- **19%** **Other**

* Multiple responses allowed
Source: *Network World*/Enterprise Management Associates

A good sign for building e-anything.

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Larry Blazevich, Sigma-Aldrich vice president and CIO, is sitting pretty knowing his company is one of the few that has fully integrated Web sales into a back-end order-processing system.

Chemical company Sigma-Aldrich wins our second annual E-comm Innovator Award.

E-COMM END TO END

BY BETH SCHULTZ

Old-line chemical firm Sigma-Aldrich Corp. is heading into new-world e-commerce with its beakers blazing. And it's hoping it has all the right elements to best its young, but well-funded, dot-com competitors at their own Web experiments.

Last fall, the $1.2 billion company wrapped up a massive two-year project that brought five brands into a unified, back-end order-processing system in the U.S. On the heels of the final site rollout, Sigma-Aldrich joined an elite group of companies that have managed to integrate Web sales functions into the process.

Nonetheless, its battle against the dot-coms won't be easy. Sigma-Aldrich may own a huge database of research chemists as customers and may have amassed years of experience working the 1.3 million names on that list, but online aggregators such as Chemdex have the glory and glamour of dot-com. That means lots of press attention and gobs of venture capital flowing their way — not to mention the perception that they're hip, highly valued members of the new Internet economy.

Sigma-Aldrich is lumped in with other corporate old-timers. Right or wrong, it's easy to cast such companies as dinosaurs, mired in traditional business practices. This chemical concern is determined to break out of that quicksand — it's Internet-based e-commerce or extinction, says Larry Blazevich, vice president and chief information officer at Sigma-Aldrich in St. Louis.

He's not talking about a Web site front end with snazzy product shots, a helpful search engine and an electronic order form that turns into paper once the customer hits "Submit." Anybody can do that, and most do. For Sigma-Aldrich, only the real, integrated e-thing will

AWARD PRESENTATION

Network World will honor Sigma-Aldrich at an award presentation March 30 at IDG Expo's ICE conference in Boston.

DocFinder: 7038

NetworkWorld E-COMM INNOVATOR OF THE YEAR 2000

The E-comm Innovator Award

Through our annual E-comm Innovator Award, *Network World* honors companies with extraordinary business-to-business e-commerce initiatives. These innovators have carefully considered business plans, intimate knowledge of the target customer base and, of course, strong technology underpinnings. This year, we honor chemical industry old-timer Sigma-Aldrich Corp.

Sigma-Aldrich wins the award for its PipeLine e-commerce site, which currently handles $2 million in orders monthly with aplomb. Atypical of most e-commerce sites, PipeLine is intertwined with corporate back-end order-processing systems. Sigma-Aldrich customers — research chemists in academic, government and corporate labs — can shop, obtain up-to-the-minute pricing and product availability information, confirm orders, and check status and shipping information all in real time.

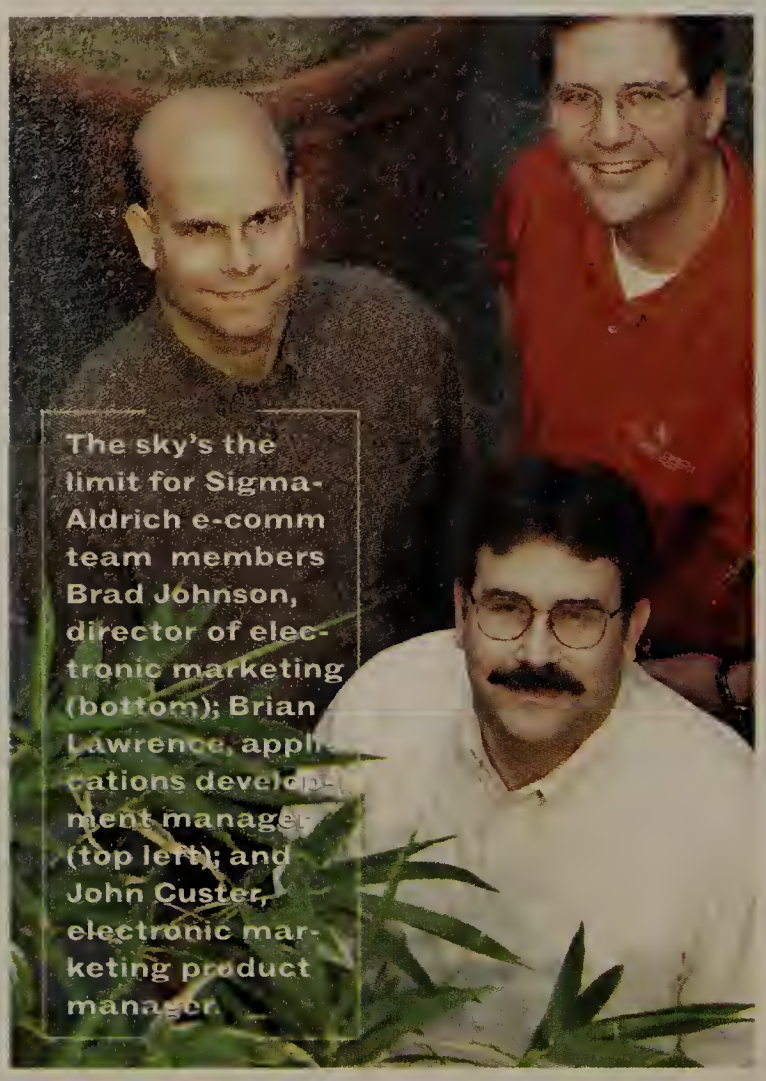
Loaded with tons of product data, safety information and innovative features such as a specialized molecular search engine, Pipeline is a winning e-commerce experiment.

GREG GOLDMAN

do: end-to-end e-commeree. For that, it's earned our second annual E-comm Innovator Award. It's one-upped the build-from-scratch dot-com competitors with a system that stays "e" from order to fulfillment. And it did so while retrofitting its existing infrastructure, all the while not interrupting the flow of its billion-dollar business.

Testing the waters

Sigma-Aldrich's Web efforts date back five years. In July 1995, the marketing department launched www.sigma-aldrich.com, state-of-the-art at the time but really nothing more than a venue for electronic produet brochures, says Brad Johnson, director of eleetronic marketing at the company.



The sky's the limit for Sigma-Aldrich e-comm team members Brad Johnson, director of electronic marketing (bottom); Brian Lawrence, applications development manager (top left); and John Custer, electronic marketing product manager.

For the next two and a half years, the site languished in cyberspace. But in March 1998, the company pulled together an 18-member team of senior marketing, operations and technology people to devisc a Web strategy. Led by Johnson, team members surveyed customers about Web usage and business needs; analyzed Web activities of competitors, industry players and companies in other lines of business; commissioned an outside evaluation; and investigated teehnology and applieation development rcquirements.

It became abundantly elear to the team that Sigma-Aldrich wasn't capitalizing on the chemical data it had gathered over the years and the knowledge of the more than 1,900 employees with Ph.D.s in chemistry. "We realized that information is our cornerstone. We are chemists. We make and test the produets — we know them. That's what separates us from the people who buy and resell products," Johnson says.

Sigma-Aldrieh needed to unlock access to its information stockpiles. It needed to show off its chemical expertise with more detailed produet data. It also needed to present its five brands — company names from previous aequisitions — in one site, with customized views.

Through merger and acquisition in the previous few years, Sigma-Aldrich had rapidly turned into a multinational company selling more than 130,000 research chemieals under the Sigma, Aldrich, Fluka, Supelco and Riedel-de Haen brand names. Prior to having an integrated back-end system, chemists had to eall St. Louis to order Sigma-branded ehemicals and Milwaukee to order the exact chemieals bearing Aldrich labels, for example. If the Sigma versions were not in stoek, call-center operators in St. Louis had no way of fulfilling the orders using Aldrich produets. Each of the five brands had been running on its own back-end system, and no interplay among those systems was possible.

Blazevich's mission-critical challenge had been to present a single, integrated front to customers: research chemists working around the world in aeademic, eorporate and government labs. Drawing in the disparate businesses had diseombobulated Sigma-Aldrieh's IS infrastructure. "Everybody had run their own order-processing systems on AS/400s, VAXes, Cobol — you name it. We had one Cobol system that was probably 30 years old," says Blazevich, who is the company's first CIO.

With or without the 'Net's arrival, Sigma-Aldrich's order-proeessing and information systems needed fixing. Yet the inevitability of e-commerce weighed heavily in Blazevich's mind. He deeided to bring in SAP AG's SAP R/3 enterprise resource planning (ERP) software and — atypical of most IS executives — opted to attack the tricky back-end order-processing systems first, starting with the SAP Sales and Distribution (SD) module.

"It was a hard decision, but we eouldn't operate effectively without a solid back-end system," Blazevich says. "We were a clunker of automation trying to move into the 21st eentury."

Despite Blazevich's conviction about e-commeree, eustomers were cool on the idea in 1998. As many as 96% of Sigma-Aldrich customers used the Web as an information resource, but most said they weren't interested in using it to buy produets. Through focus groups, the Web team learned that the research chemists did not think they'd be able to get the go-ahead to buy online. Most of the buyers were dealing with their own legacy order-processing systems and figured proeurement offieials wouldn't be open to the Web-ordering concept. "Customers told us, 'You guys ean go ahead and do e-commerce, but we can't use it yet,' " Johnson says.

But why not test the waters? Online ordering would nieely eomplement the enhanced multi-brand content, developing the order form would be easy, and inputting the orders into its disparate legacy systems would be fairly routine. If customers used the online ordering, greal. If they didn't, no big deal.

Continued on page 62

Adding structure to online chemical sales

Given that Sigma-Aldrich Corp. sells more than 130,000 chemicals, its customers — mainly research chemists — sometimes need a little help figuring out exactly what product they need to order.

The company lends them a hand through a nifty option that lets the chemists draw a chemical structure, then search for the Sigma-Aldrich compounds either matching or containing that structure. For example, upon drawing and searching on a structure that has a benzene ring containing both a chlorine and bromine group, a chemist would learn that Sigma-Aldrich offers several products that match or contain that structure, says John Custer, electronic marketing product manager at the St. Louis company.

Using other site resources, the chemist could then research how to handle the compounds safely, study the exact composition of the product lots and, of course, buy the chemical — provided it isn't part of Sigma-Aldrich's Library of Rare Chemicals.

If that's the case, the research chemist would have to request custom packaging. "We sell rare chemicals only on a case-by-case basis," Custer says.

"In fact, chemical ordering is complicated. In addition to special handling situations, we are governed by regulatory bodies and legal constraints. One challenge was to ensure that our Web systems followed all the business rules we employ in the manual process," adds Brad Johnson, director of electronic marketing at Sigma-Aldrich.

If the research chemist has never ordered from Sigma-Aldrich before, he must first register and await verification. This process can take 24 to 48 hours, Johnson says. "We need to be sure we meet all compliance, regulatory and ethical issues surrounding chemical sales," he adds, noting the process is no different for Web sales than it is for phone orders.

Once a research chemist is verified and set up in Sigma-Aldrich's SAP AG enterprise resource planning system database, the verification process is streamlined and orders are processed in real time, says Larry Blazevich, vice president and chief information officer at the company.

The search and drawing tool are customized versions of products made by a company called Oxford Molecular Group.

— Beth Schultz

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Continued from page 60

Admittedly, having to print out orders and enter them into legacy systems did give the team pause. Although the move to SAP R/3 was already under way, it wouldn't be completed in the U.S. until late 1999. Nevertheless, Sigma-Aldrich added a first-generation e-commerce facility to the company's revamped Web site in September 1998. "We figured, we'll do full e-commerce later, but if we can emulate it now, why not?" says John Custer, electronic marketing product manager at Sigma-Aldrich.

The company was not prepared for the reaction this initial e-commerce site would trigger.

Chemical explosion

The problem was, despite what customers said in surveys and focus groups, they did use the online ordering facility, and plenty. That first month, Sigma-Aldrich rang up $300,000 in chemical sales from its Web site. By January 1999, it was doing $700,000 per month in Web business. It reached the $1 million per month mark in less than six months, and the company now does nearly $2 million in monthly online orders.

The volume was staggering. A typical order, for two chemicals, only costs $200. That means by April 1999, approximately 5,000 orders per month were coming in via the Web from 100,000 registered users. And it wasn't a simple matter of plugging the order in to the legacy back ends; the orders invariably required someone in customer service to call the chemist who had placed the order. Selected products might not be in stock, for example. Sigma-Aldrich soon discovered that processing a Web order was one-and-a-half times more resource-intensive than handling a phone sale.

Sigma-Aldrich is also challenged by the need to process orders at lightning speed. Research chemists order chemicals on an experiment-by-experiment basis, rather than in bulk. Some customers literally place as many as 1,400 separate orders each month, Blazevich says. Providing quick delivery is paramount — 95% of the three million orders placed yearly are shipped the same day as received. That speaks to the absolute necessity of an integrated back-end order-processing system, he explains: "At our volumes and requirement for getting orders out quickly, we can't afford to take an order, print it out and input it in one of our legacy systems."

Good thing the SAP deployment was now well under way.

SAP strategy

Actually, Sigma-Aldrich began the SAP deployment in November 1997, prior to the work of the Web strategy team and after a major network overhaul. Before any new ERP software could be deployed, Blazevich had to migrate the company from its terminal-based environment. So he rebuilt the corporate WAN using frame relay and deployed client/server LANs. With that done, he could begin rolling out the SAP software in the U.S. and Europe.

While SAP rollouts continue on the other side of the Atlantic, by October 1999, Sigma-Aldrich had all U.S. chemical sites in production. This opened the opportunity for full-scale integration with Web ordering.

Sigma-Aldrich wasted no time. When members of the company's e-commerce team sat down for their Thanksgiving dinners, they did so comfortable that the Web integration was complete. Thanks to the Web/SAP integration, accomplished using middleware from Haht Software, based in Raleigh, N.C., research chemists coming to www.sigma-aldrich.com now get multibrand product information, customized pricing and product availability information. Of course, they can also place and confirm orders and verify shipping data, all in real time. The former is accomplished via the Haht Shop software and the latter with Haht Track; both are part of the vendor's Commerce e-Scenarios applications suite.

The Haht software runs on two mirrored Windows NT servers. That's not the case for all Sigma-Aldrich's e-commerce-related software:

- The SAP application runs on an AIX server and smaller NT servers.
- Much of the content is served via Notes Domino Web server software running on three IBM AIX machines.
- Other content, specifically some 90,000 Material Safety Data Sheets (MSDS) and two million certificates of analysis, is delivered via Netscape Application Server software running on another two mirrored Windows NT servers. The MSDS and certificates of analysis, which provide lot-specific breakdowns of each chemical, are stored in an Oracle8 database.

The product data search engine, from Verity, runs on three Sun Solaris servers. Sigma-Aldrich isn't banking on this architecture, though. Brian Lawrence, applications development manager, says he'd prefer Unix alone. "It's more stable than NT," he explains.

However, Lawrence is tied to the dual operating system architecture for now because the Haht software currently uses Microsoft Common Object Model objects to communicate with the SAP application. Upcoming Haht versions will support Sun's Java 2 Platform and use Enterprise Java Beans instead, so they won't have to run on NT.

High-stakes experimentation

Sigma-Aldrich's e-commerce experimentation seems to be paying off. In late 1999, the industry publication *Chemical & Engineering News* named Sigma-Aldrich's PipeLine as the preferred solution for buying chemicals over the Internet. It came to that conclusion based on a random sampling of 1,000 subscribers, who evaluated five online chemical providers on quality, on-time delivery, follow-up service and technology leadership. Other sites in the survey were Chemdex, Fisher Scientific, SciQuest and VWR.

Despite its busy and apparently fruitful 1999, Sigma-Aldrich isn't resting on its laurels. In early January, the company established a multifaceted partnership with Ariba. It will make its products and information available through Ariba's e-marketplace (see "Auction Action," page 91), collaborate on continued development of the Com-

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EDI lives on

Sigma-Aldrich Corp. has embraced Internet-based e-commerce, but good old electronic data interchange still has its place.

EDI is a widely used commerce technology for conducting business with the big pharmaceutical companies, says Larry Blazevich, vice president and chief information officer at the St. Louis chemical company. While a chemist in a university lab might order one or two chemicals at a time, a corporate R&D facility that employs 500 chemists might order 50 items at once, he notes.

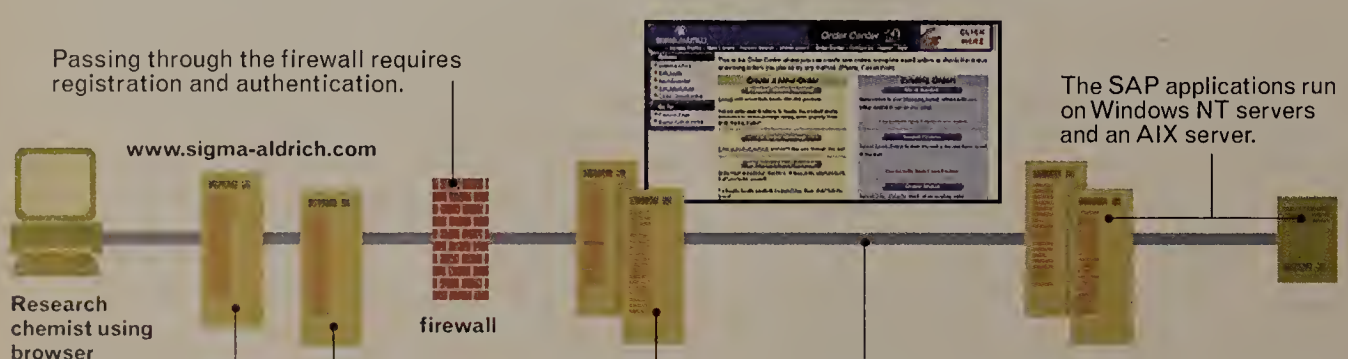
Last year, EDI-based orders accounted for $40 million, or roughly 10% to 12% of business, Blazevich says. Phone sales, now supported by a new, state-of-the art virtual call center, account for the bulk today.

Bear in mind, of course, that Sigma-Aldrich's Internet-based e-commerce experiment is really just beginning.

— Beth Schultz

TRACKING A CHEMICAL ORDER

A research chemist for a pharmaceutical company needs to find a reagent for an experiment he plans on conducting later in the week. The chemist heads to the Sigma-Aldrich e-commerce site, where he is a registered user.



- Information about multibrand products, customized pricing and product availability is delivered via Haht Software's Haht Shop software.
- Order placement, confirmation and shipment verification is done via Haht Track.
- The Haht applications suite runs on two mirrored Windows NT servers.

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Continued from page 62

merce XML specification and establish an end-to-end research supply chain with Ariba and EMAX Solutions Partners. This latter company hosts inventory databases for research chemists.

Lawrence describes how this relationship comes into play in a chemical hunt. Say a research scientist is conducting an experiment and realizes he needs a particular compound. The first thing he'd do is call up his Ariba desktop (that presumes the corporate procurement office has standardized on Ariba). From there, he'd punch out to his company's inventory database managed by EMAX. Discovering the chemical isn't available in-house, he'd then punch out to Sigma-Aldrich's site and place the order. Order processing would flow seamlessly through Sigma-Aldrich's and his firm's back-end procurement systems.

Sigma-Aldrich also intends to work with mySAP.com and other e-marketplace vendors. It has further partnered with Haht for additional site development, including personalization, localization, management of e-mail campaigns and the ability to cross-sell and up-sell based on past orders placed, type of customer, geography and even site traffic patterns.

In fourth-quarter 1999, Sigma-Aldrich captured more than 5% of its U.S. chemical sales from the Web site and expects that figure to grow to 50% by year-end 2003, Custer says. That would mean more than $200 million in revenue.

Not bad, given that the company estimates it has spent $5 million on e-commerce to date. That cost includes hardware, software, internal people resources and consulting, Custer says.

However, that doesn't include the cost of the critical SAP piece. All said and done, Blazevich says he expects to spend between $30 million and $50 million on the worldwide SAP rollout alone. (Sigma-Aldrich is one of largest users of SAP's SD module.) He breaks down the overall budget: 10% for training, 20% for software, 30% for hardware and 40% for consulting.

"People have been valuing 'Net companies more than traditional companies, and now we want them to know that we know what we're doing on the Internet."

LARRY BLAZEVICH VICE PRESIDENT AND CIO, SIGMA-ALDRICH

Fortunately, Blazevich says, Sigma-Aldrich is a financially sound and profitable company capable of providing all the resources needed to do this undertaking right. Proof of the company's financial health is its presence on the 1999 Forbes Platinum 400, a list of the best-performing, big U.S. companies in terms of growth and profitability, he adds.

And now that the Web is integrated with back-end order processing, Sigma-Aldrich is ready to give the dot-com chemical companies a run for their money. "We're going to start playing the game a little more, try to tell people more about what we're doing," Blazevich says. "People have been valuing 'Net companies more than traditional companies, and now we want them to know that we know what we're doing on the Internet."

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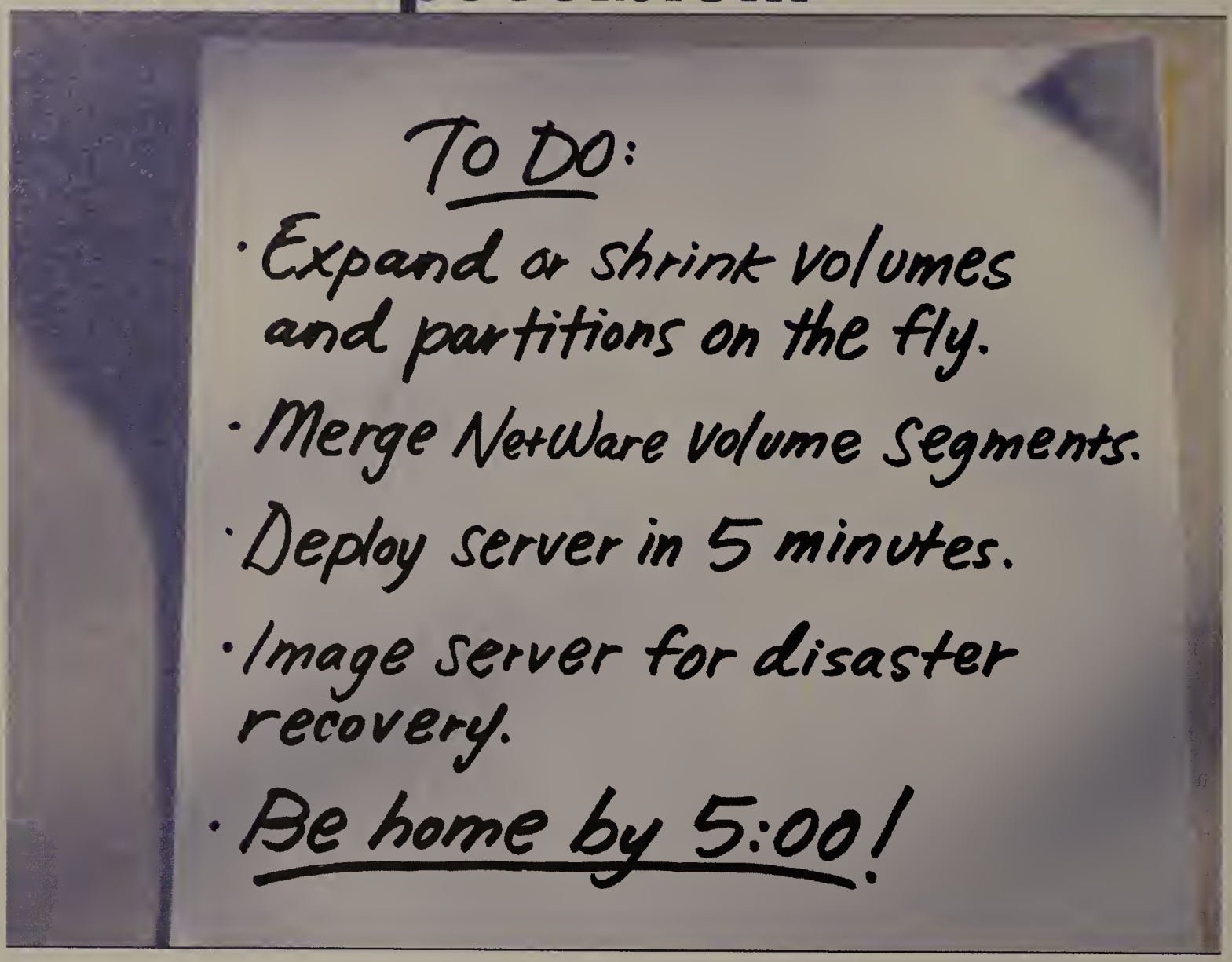

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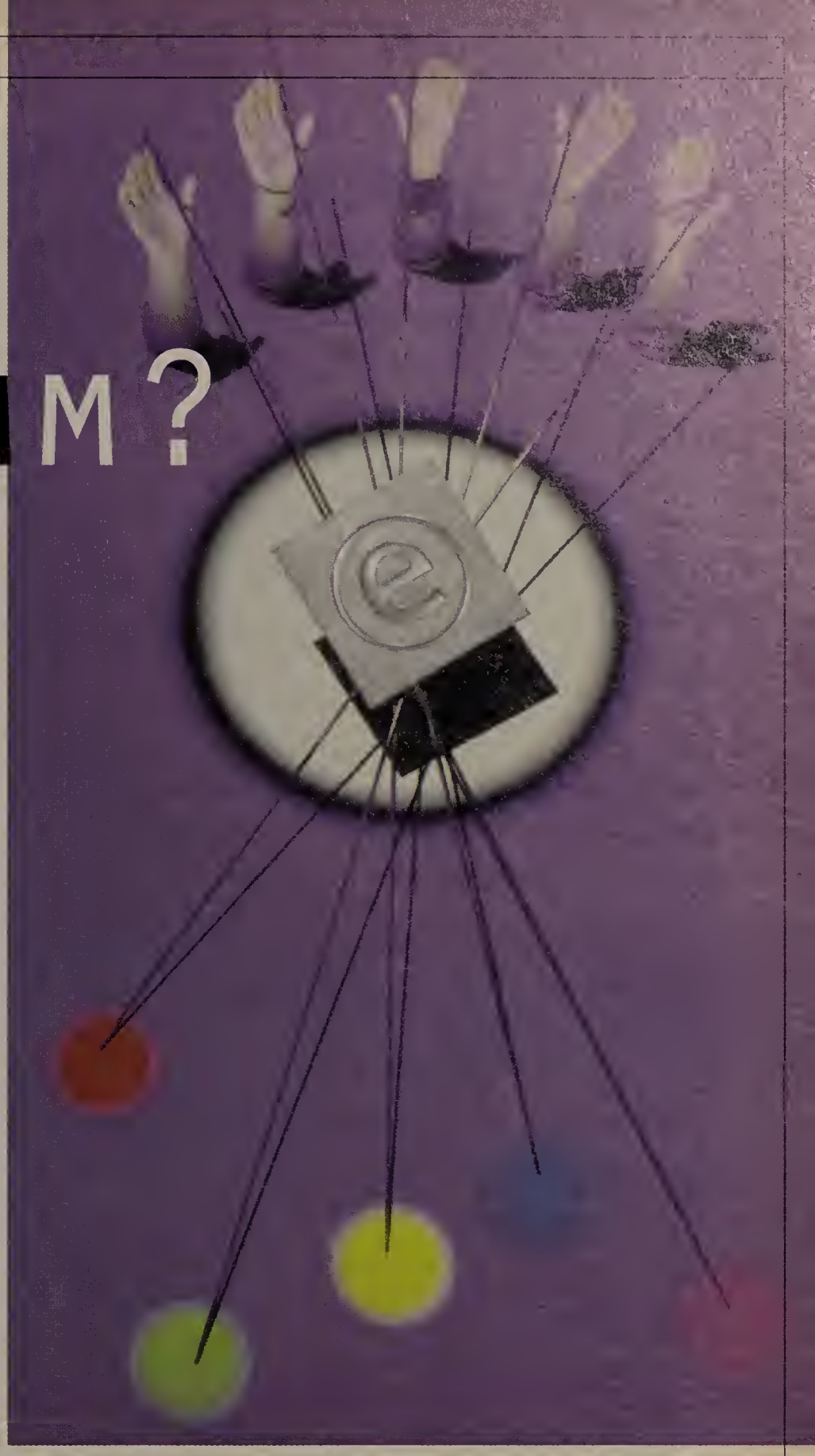

Not just any network department can handle e-comm requirements.

BY THEO FORBATH

Forget about high reliability, availability and scalability. *Continuous* is the word you're looking for when it comes to e-commerce. Establishing expertise in five key areas will keep your network department prepared for the rigors of e-business.

1. Network design

Network engineers absolutely must know how to design a meshed frame-relay or ATM WAN core using a series of permanent virtual circuits. Furthermore, because of the number of router peering sessions such a design would entail, they must be well-versed in Internet Engineering Task Force plans for Multi-protocol Label Switching. MPLS addresses the scaling limitations of large meshed IP networks.

What's more, network engineers must build redundancy into critical backbone and Internet access points. This seems an obvious point, yet network departments have not invested in this area to the same degree as their system counterparts. Be sure your network engineers can guarantee users and customers will be able to access the box even if a switch fails.

2. Advanced security

If you're venturing into e-commerce, you can no longer define the corporate security strategy by firewalls that are intended to keep out the rabble and only allow in trusted, known users. You need to implement much more granular access control mechanisms based on specific information and application-usage requirements. A well-rounded network staff should be trained in public-key infrastructure and network- and data-storage-layer encryption technologies, as well as how to administer certificates of authority.

3. Testing and modeling

Network engineers must be able to demonstrate to application and systems colleagues how network-unaware or poorly designed applications negatively impact network performance. They must know how to test and certify e-commerce applications before those applications go live, and how to use related tools. Familiarity with tools from companies such as Optimal Networks and Ganymede Software is a must.

4. Service-level management

Your networking group is probably expert in measuring speeds and feeds from traditional SNMP monitoring tools. Now you need to ratchet up those responsibilities. Your network staff has to manage applications from the business customer perspective using systems that measure service levels from the top down. Networking engineers must implement monitoring and reporting tools that use active and passive application testing approaches. It's worth establishing expertise in ResponseCenter from Response Networks, VitalSuite from Lucent's NetCare unit or NextPoint S^3 from NextPoint Networks.

5. Outsourcing

Of course, as your network department takes on more customer support, it must identify the operations that can be outsourced. Part and parcel of choosing an outsourcing firm is knowing how to put in place a well-defined service-level agreement (SLA). You should know how to get external services with strict SLAs that specify exact performance levels, times of availability, escalation procedures, change processes and financial penalties for not following any of these established service levels.

Forbath is a director at Northeast Consulting Resources in Boston. You can reach him at (617) 654-0641 or forbath@ncri.com.

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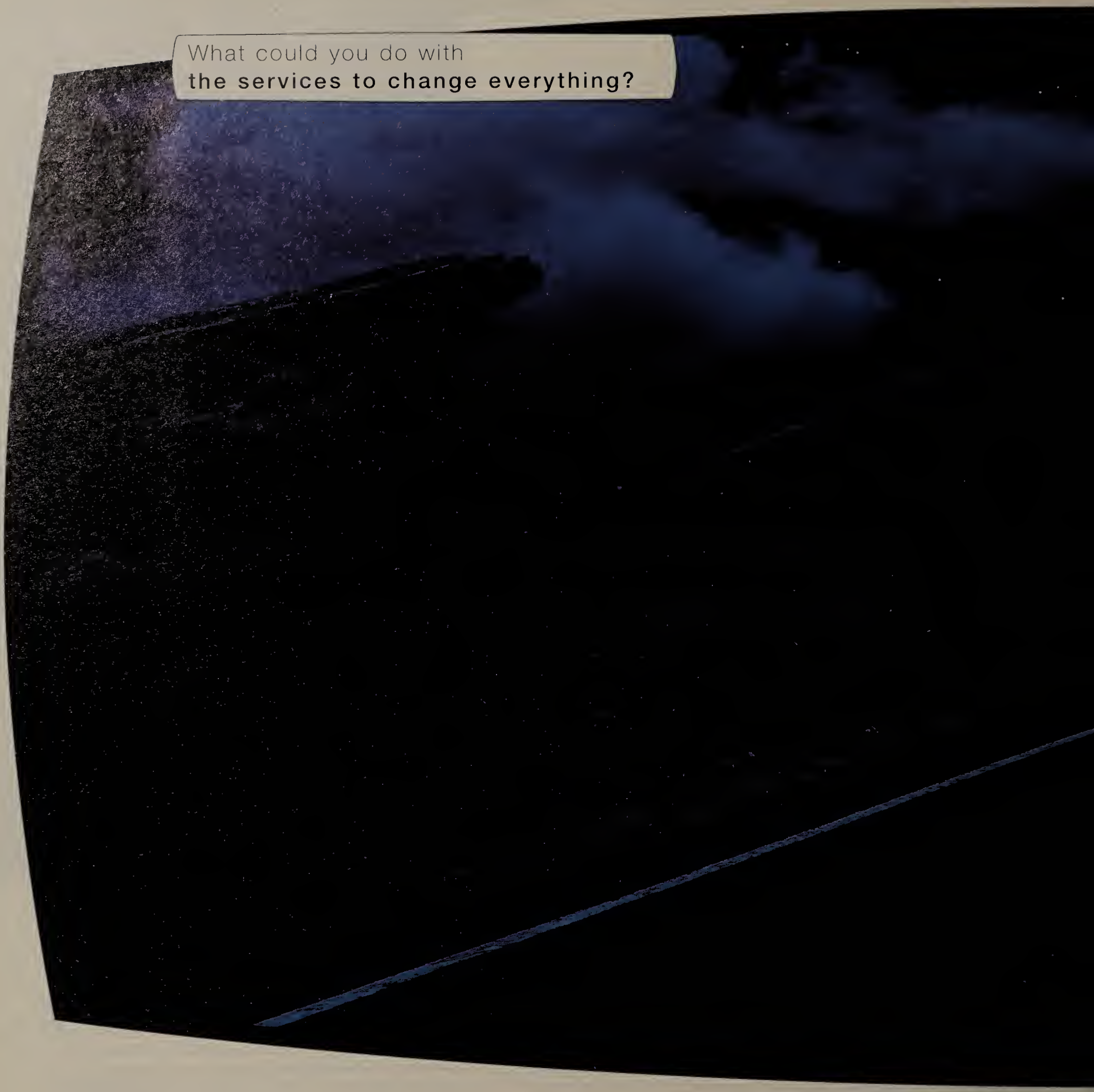

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INSIDE INFORMATION

From new technologies to outsourcing, veteran e-comm executives share their insights.

BY PAUL DESMOND

Fast and furious. That's how Nancy Grim, vice president and general manager with American Express Corporate Services Interactive, describes the e-commerce scene. Her peers at Ernst & Young and Staples.com are quick to agree.

The three are intimately involved with the e-commerce initiatives at their respective companies. At American Express, Grim helps customers save time and money on travel, expense and purchasing functions. John Quinn, a principal with Ernst & Young's National Health Consulting Practice, is in charge of the company's center for health-care emerging technologies. He is also technical chair of Health Level 7, a 13-year-old standards organization for health-care messaging. Mike Ragunas is vice president of IS for Staples.com, an online office supply and business services company.

We pulled them together for a conversation on topics ranging from how e-commerce is changing businesses to how users deal with problems such as integration with existing infrastructure and emerging technologies such as XML.

How has e-commerce changed your company?

Grim: It has changed our culture. We are much more fast-acting and decision-oriented; a very different company has emerged from three years ago.

Ragunas: E-commerce has changed our company structurally, to the point that we've now created a separate operating unit that focuses on our e-commerce businesses and has its own tracking stock. So we recognize this as a shift in the marketplace and that it's going to change the face of retailing.

Quinn: We've basically turned the organization on its head. The entire plan for the organization going forward, starting in 1998, is based on e-commerce strategies. Just about everything we do at this point is expected to examine and address, and in many cases be led by, the e-commerce requirements of our clients.

What is the biggest technology-related problem you've had to date in implementing e-commerce?

Grim: Our challenges were making sure we kept in line with the very simple to very complex requirements we would need to meet for our customers — which span from companies with 100 employees to the largest global multinationals in the world — and projecting into the future the emerging technology platforms and solution sets they would require.

Ragunas: In our case, the real challenge was picking the right partners. We subscribe to what we call a market forces theory, which is to look at who seems to have momentum in the marketplace and

Mike Ragunas, vice president of IS at Staples.com (left); Nancy Grim, vice president and general manager with American Express Corporate Services Interactive; and John Quinn, principal with Ernst & Young's National Health Consulting Practice, talk about their e-commerce expectations.

who does the best job at subscribing to emerging standards that we'll be carrying forward. We also rely on internal folks who go out and review products in advance of our needs so we're well-positioned to make decisions quickly when the time comes. And we rely on IT advisory firms because they have a broad view into who the right players are.

Grim: The other thing is, as you go through the evaluation of partners, you need to stay nimble and flexible and ready to change on a dime because there may be an announcement from a secondary partner that will make you change your thinking.

Quinn: In the health-care industry, the biggest technical barrier is lack of standards that cover not just the ability to move information, but also the meaning of the information. The clinical vocabulary is massive, hundreds of thousands of terms, and there is no good set of standards defining what those terms mean and how they're to be enunciated.

What's your biggest concern over how e-commerce affects your company's existing network infrastructure?

Ragunas: Growth and scaling of the environment are probably our primary concerns. We have already grown our business tremendously over the last year, and we're looking to continue to grow exponentially over the next several years. We've got people out there looking at our plans and making sure we have infrastructure in place well ahead of the time that we need it. We call it 'laying the track in front of the train.'

Grim: Tactically speaking, the biggest concern is hooking up to legacy systems. We have to make sure we're not hooking up to a system or a process that shouldn't be around two years from now.

Quinn: Our biggest concern is growth — and on a massive scale. The Internet economy and e-commerce are pushing people in health care into ideas they didn't dare consider two or three years ago. When you talk about 10, 20 or 30 million records or users online, where a robust system might have had 10,000 users online before, it's clearly a challenge that's causing everybody to rethink how they address their databases and networks.

How do you see XML factoring into your e-commerce plans?

Quinn: The most exciting thing that's happened on the data standards, messaging side of health care in the last several years is the concept of using XML as a mechanism for transport, definition of data and, with the addition of [Extensible Stylesheet Language], the ability to maintain the integrity of presentation format across the network. These combined have made XML basically the keystone of serious work now being done on how we move entire patient records between institutions.

Ragunas: XML provides a great way for us to integrate relatively quickly, and in a standardized way, with third-party partners that are providing services to our customers. We can use it to integrate shopping cart information, for example. If somebody's ordering something on a third-party site, we could bring that transaction back into our Staples.com shopping cart, so we're creating an integrated shopping experience for the customer.

Grim: We just launched the American Express B2B Commerce Network. As part of it, we're offering to deliver purchase orders to suppliers via basic fax, XML, e-fax and e-mail. But most suppliers are not enabled to accept XML yet. So we've got to make sure that we create the supporting infrastructure for people.

What e-commerce-related product or technology category would you say needs the most improvement at this point?

Ragunas: We've been focusing on managing a product catalog for e-commerce. It's an area where I think most people have been growing their own. Things are starting to come out now, but they're still fairly immature.

Find it online: www.nwfusion.com

DocFinder 7031 Get the audio of this discussion, and hear our roundtable participants speak on other e-commerce topics.

Grim: Content management and delivery, as well as enabling sellers to be able to digest the fact that buyers are moving at a very rapid rate. The sellers' suppliers are probably struggling to keep up. The nationals have figured it out, but there's a whole bunch of suppliers that haven't yet.

Quinn: From the health-care side, having the data available in a legacy environment that we can use to put into XML documents is the most needed product category at this point. Many large organizations right now are suddenly putting huge new emphasis on the creation of computer-based patient record systems because they recognize they need them as an enabler to further e-commerce strategies.

What was the biggest nontechnical problem you had in implementing e-commerce?

Ragunas: Once you make a decision to do something, it becomes an all-out scramble to get things in place because of the competitiveness in the marketplace and the desire to take advantage of new business plans. Probably our biggest challenge was getting things done extremely quickly, but at the same time being comprehensive in the delivery.

Grim: Ours was the adoption rate of our customers. Before you have the full solution set out there, you need to begin to build awareness and educate your customers as well as any supplier that's going to work within the network. So by the time the solution set hits the marketplace, you have an educated group of potential buyers.

Quinn: The biggest problem is categorized under awareness. We don't really have common process standards in health care. Different providers tend to follow a general clinical process, but the implementation of that varies widely. So an awareness of what the processes are, how to be flexible with them and how to apply them to an e-commerce solution is probably the biggest single nontechnical challenge.

What is the biggest benefit you've seen from your e-commerce efforts?

Ragunas: They have really opened up a tremendous new sales channel. This is a new way for our customers to shop at Staples, but it's also a great way for us to reach customers who have not shopped with us before. We can give them an experience that no other channel can offer in terms of the personalization, 24-7 availability, and that sort of thing. It's also been a great way for us to extend our brand and move into things like services, through our Business Solution Center, that really lend themselves extremely well to online presentation.

As part of our site, we're offering services from key partners to small businesses. We have Internet services like e-commerce hosting and Internet access. We have long-distance, payroll services and an intranet service that lets customers set up intranets for their small business.

Quinn: The greatest opportunity has probably been the ability to enable physicians and organizational providers such as hospitals and patients to communicate — to be able to share information, interact efficiently with each other and to do that without a burdensome infrastructure. A PC with an Internet browser on it and an ISP hookup is manageable. A larger infrastructure

Continued on page 74

"E-commerce should enable us to start treating health information pretty much the same way we treat the rest of business information — quickly, accurately and ubiquitously available."

JOHN QUINN, PRINCIPAL WITH ERNST & YOUNG'S NATIONAL HEALTH CONSULTING PRACTICE

"Tactically speaking, the biggest concern is hooking up to legacy systems. We have to make sure we're not hooking up to a system or a process that shouldn't be around two years from now." **NANCY GRIM,** VICE PRESIDENT AND GENERAL MANAGER, AMERICAN EXPRESS CORPORATE SERVICES INTERACTIVE

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Continued from page 72

is economically and technically too burdensome for a small-practice office.

Grim: Externally e-commerce has allowed us to transform our offerings and re-engage current clients. And it has led, in many cases, to a differentiation that has allowed us to retain customers. It has also, for the first time in many years, allowed us to go into clients who were not interested in our older value proposition and open their eyes to the new things we're bringing to market.

Internal to American Express, it has allowed us to change the skill set of existing employees and attract a new, really invigorated group of people who are helping us to look at where we need to go with our business.

All of you are outsourcing at least some e-commerce functions. What are the keys to working effectively with service providers?

Grim: We review the service providers from a technology perspective, a process perspective, overall resources and a security perspective. Then we cut service-level agreements with them, which outline the key deliverables they're responsible for and the metrics we need them to meet. The back end is having that set of metrics you track against so you can constantly evaluate quality and performance and ensure the provider is meeting the benchmarks, as well as the satisfaction levels you've outlined.

Ragunas: I concur that service-level agreements are critical. We also feel strongly about having a strong core of people from Staples working with any third parties that are doing any development or performing any services for us. And we make sure those people are in leadership positions within the effort, to keep things focused in the way we want them to be working.

"Our biggest challenge was getting things done extremely quickly, but at the same time being comprehensive in the delivery."

MIKE RAGUNAS, VICE PRESIDENT OF IS, STAPLES.COM

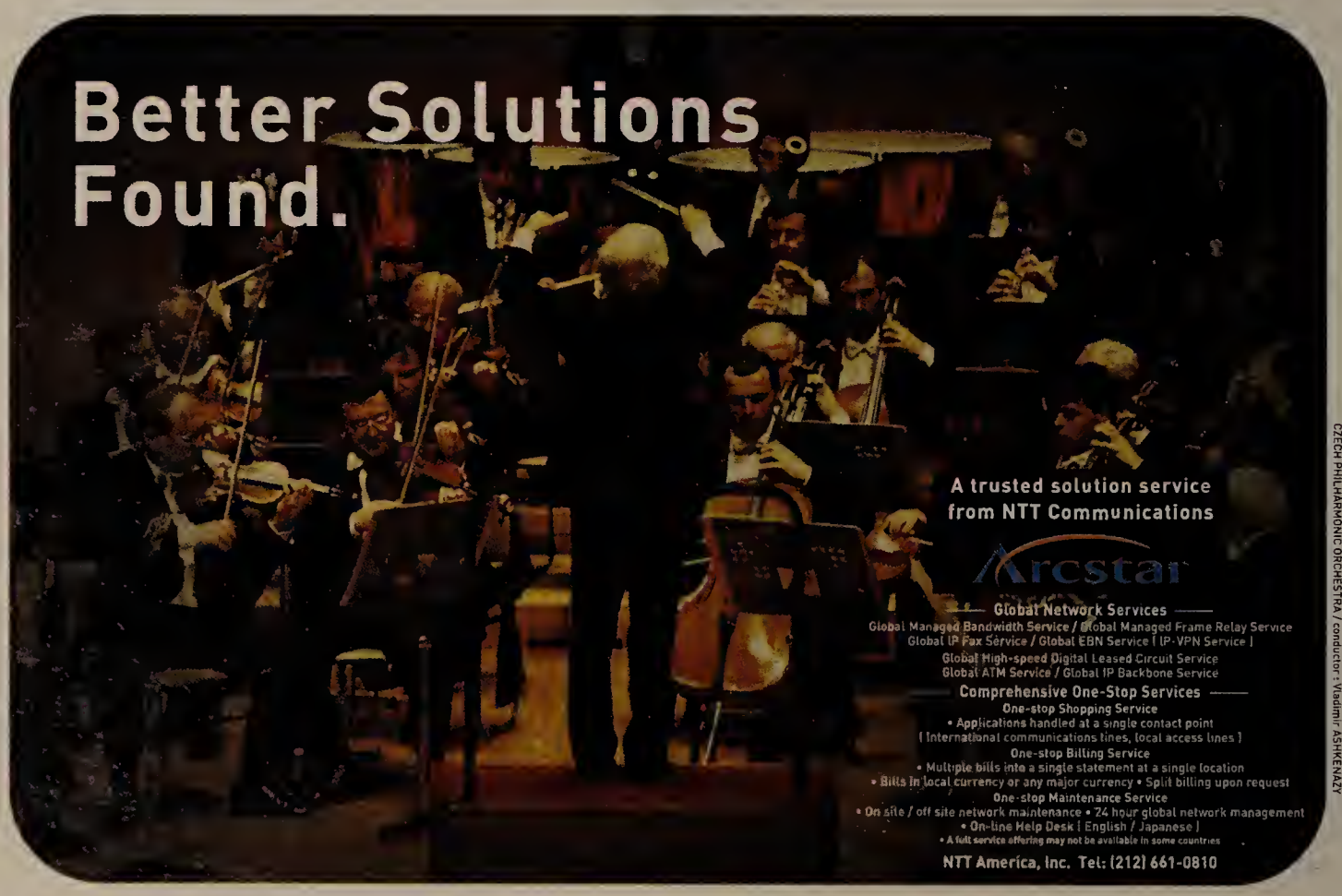
Down the road, how do you envision e-commerce will change your companies?

Ragunas: You'll see a tremendous amount of integration of e-commerce into all of our different businesses. You'll see kiosks in our stores, you'll see Web and e-commerce technologies being employed in all the different parts of our businesses. Customers will just become more used to shopping with us wherever it's most convenient to them and having it be a really seamless experience as they go from one channel to another.

Quinn: Health care is an industry in which most information is still maintained on paper and moved around by voice and fax. So e-commerce should enable us to start treating health information pretty much the same way we treat the rest of business information — quickly, accurately and ubiquitously available.

Grim: We're looking at all the touch points we have with our customers and suppliers. There is nothing we're going to be doing as part of our core value proposition that doesn't involve some part being delivered or transacted over the Web. It's fast and furious, and it's only going to escalate.

Desmond is vice president of King Content, a strategic publishing company in Southborough, Mass. He can be reached at paul_desmond@kingcontent.com.



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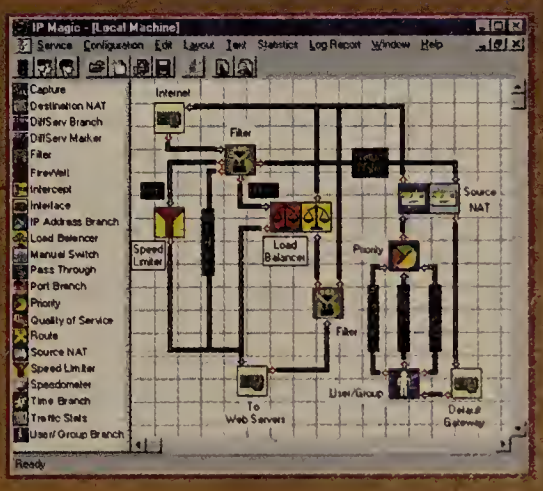

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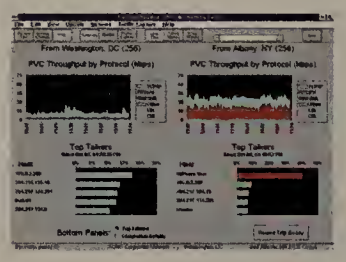

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What every extranet contract should cover.

BY DENISE DUBIE

LEGAL FINESSE

Ken Hawk, iGo founder, made sure he built accountability into the extranet contracts he forged with partners such as Dell and Ariba.

Your company just finished developing a hot product, and the directive to sell it over the Web has come from the top. You've done your research and know that to reap the benefits of e-commerce fully, you'll need an extranet. Just as you'll sell your product online, you'll order materials and conduct business with distributors via the Web. You've got the technology — but hold on. A great extranet means more than an unstoppable IP network. At least as important is the contract with your extranet business partners.

When hashing out an extranet contract, you and corporate counsel should start with the usual legal points — terms and termination, indemnification, liability limits, nondisclosure and exclusivity. But an extranet contract has a unique take on "representation and warranties," a common contractual term that means the parties involved have the authority to enter into the contract. Likewise, you should understand the technical ramifications of the legal issue "source-code escrow" and be able to advise the lawyers on who should be responsible for site maintenance, availability, security and backup.

Before agreeing to share data over an extranet, you should first know what it is you're showing and to whom — in other words, protect your intellectual property. This is the concept of "zones" used by carriers, says David Lafferty, president of Scientific Technology Services, a systems integrator in Anchorage, Ala. Lafferty breaks extranets into four zones: private (data you never intend to share); company (your company owns this data, but shares it with business partners); shared (your company doesn't own the data, but needs access to it); and public (any data you freely display).

Zone provisions may be laid out in a contract's representation and warranties section. In addition to declaring that those who sign the contract have the right to do so, this section dictates exactly what the parties guarantee.

For an extranet, warranties are the hot spots. Partners should commit to what material is being shared, nondisclosure on that material if it is in the company or shared zones, and, in the case of software, who will warrant the shared material's performance. For instance, if applets or servlets are being shared for order entry or back-end processing, a contract needs to address performance. This section of the contract might include language such as: "Company A will 'represent and warrant' that any bugs to said software will be repaired within 24 hours." Of course, acceptable response times, ongoing maintenance and the distribution of upgrades are all areas to dicker over and agree upon contractually.

Nondisclosure should get more than a cursory glance from you and your counselor. Must your partner stay mum over sensitive issues for the life of the contract? Forever? Or sometime in between? Spell it out, Lafferty says. Sensitive issues could include research and development news, product information and technological details — information that would be considered private, company or shared.

With these ducks in a row, it's time to establish the business contract, outlining joint goals, advises Marilynne White, vice president and general counsel at Logical Design Solutions (LDS), an e-business consulting firm in New York. "One hurdle of an extranet contract is matching business styles," she says. The contract should establish what each party expects to receive and contribute in demonstrable terms.

Extranet go-getter

Site maintenance was a big contractual issue for iGo Corp., the cellular accessory supplier for Dell and one of the online sellers in Ariba's e-marketplace. "You need to make it clear who's responsible for what. Accountability simplifies things," says Ken Hawk, founder of iGo, in Reno, Nev.

Because the Dell and Ariba sites act as front ends to iGo's parts catalog on the Web, its extranet contracts specify that iGo must maintain this parts catalog site. iGo guarantees that the Dell and Ariba sites can access all order information 24-7. Likewise, Dell's field personnel can order directly from iGo within Dell's site via the extranet connection.

Source-code escrow was one of the contractual issues to determine between IBM Global Services and its extranet partners, says Jim Chester, vice president for strategic initiatives at the company. Source-code escrow gives one company the right to maintain software developed by another following a contract's end.

IBM Global Services obtained the rights to maintain software at the dissolution of a contract with Aventail and Security Dynamics. The two companies provided engineers for IBM Global Services' extranet architecture design and review process. They are also involved in ongoing decisions related to upgrades, patches and other system changes. But when the companies' involvement ends, under the terms of the contract, Chester's team has the right to maintain the software. Chester says he didn't want to risk owning obsolete software in a few years and putting his extranet through an infrastructure change.

Owning up

Extranet contracts will also venture into familiar ground for network managers: service-level agreements (SLA). These might be covered under "responsibility," legal jargon that means liability and indemnification or risk, explains Ieuan Mahoney, partner and co-chair of the intellectual property group at Holland and Knight, a law firm in Boston.

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IRA MARK GOSTIN

Like an SLA, your contract should include strict responsibility guidelines, preferably in measurable statistics, such as Web site availability and response time, advises David Liederbach, vice president of e-commerce marketing at IBM. The contract should state "this site will have 99% uptime" or the responsible company must pay a specified amount for the time and potential money lost during that period, he says. (For more guidance on acceptable statistics, see *NW*, Sept. 27, 1999, page 45). The difference between a regular SLA and an extranet contract is that "responsibility" can be a matter of negotiation.

When developing a traditional buyer/seller extranet, responsibility usually falls to the seller to assure high availability, Mahoney says. iGo had to commit to availability, service and performance levels in its contract. The company promised its partners 24-hour extranet access, meaning there are penalty terms in place for iGo if it can't meet that level. But for development partnerships — say R&D folks in two different companies working over an extranet — responsibility needs to be agreed upon.

An extranet contract often needs to spell out what becomes of source code after the partnership ends, says Jim Chester, vice president for strategic initiatives at IBM Global Services.

Another point to hammer on while negotiating a contract is ownership of intellectual property. Your company should retain power over its corporate name and brand names, Mahoney advises. Should an extranet site create new brand names or modify existing names, contract for their ownership — unless you sell them to your partner. "You want to have control over what a partner can do with the value you are providing," he says.

Similarly, think about how this extranet contract might affect other partnerships you'll want to create during its term. "Exclusivity" is the legal term for selling an offering to only one party. Does this contract promise one business partner private reign of your product? Does it promise exclusivity on the systems put in place for this partnership — or can you use them for other extranets?

Specify to the smallest imaginable degree how your business partner can use your product, Mahoney says. By doing this, multiple partners can use your offering in different ways.

And you also must determine the length of time you and your partner work together, says David Lintz, partner at Mintz Levin, a Boston law firm. He recommends a two- to three-year contract to start. One year is not long enough to prove success, but more than three years may be financial suicide. A contract should also cover "dissolution," meaning when a partnership will end or what would cause a partnership to end prior to a contract's expiration.

"If you don't entirely know the business and what can go wrong, at the very least, understand your level of comfort with risk, what you are willing to give up in order to get a deal done," Lintz says. By combing through the technical and business details of your extranet partnership, and chiseling them into writing, you'll find that you're risking less and reaping more. ■

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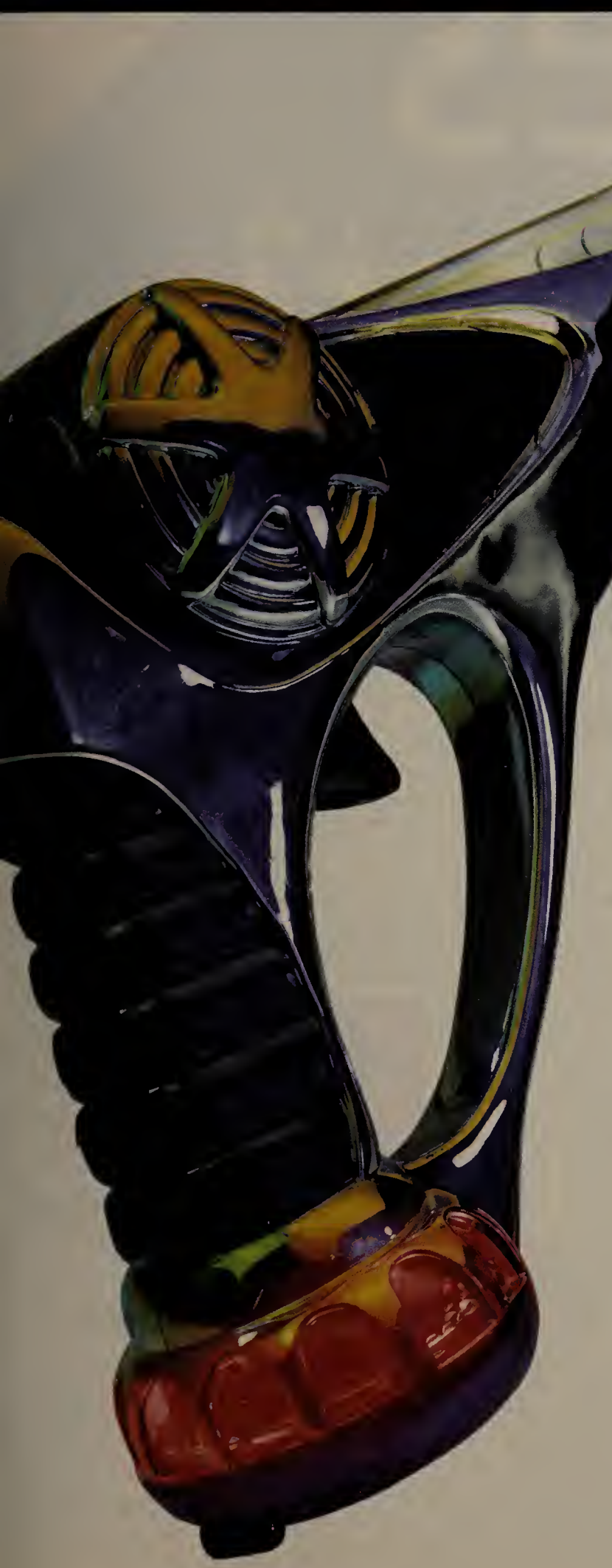

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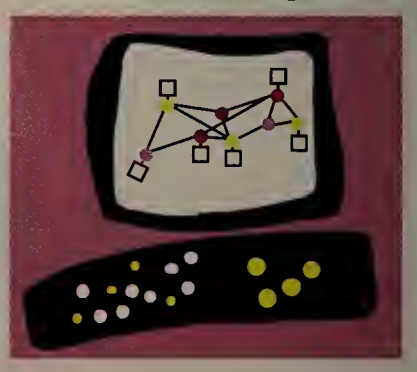

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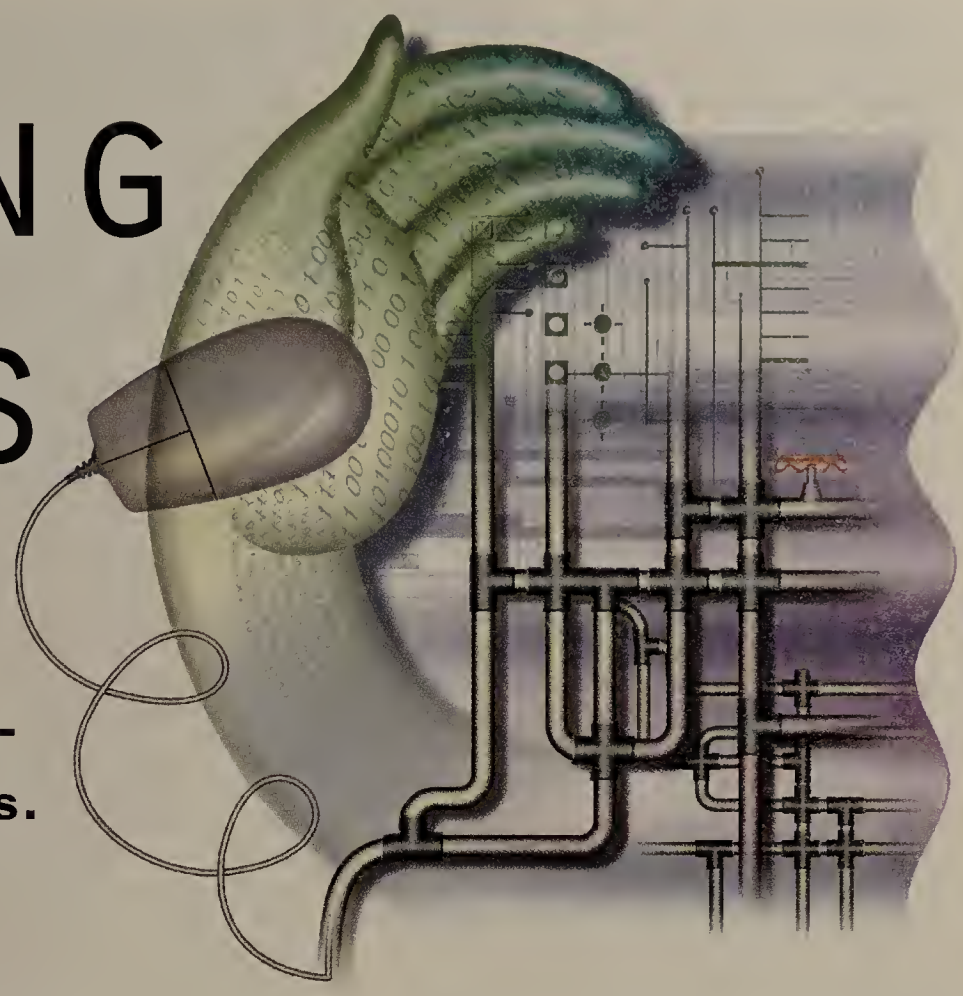


IBM's WebSphere Commerce Suite tops our list for business-to-business e-commerce needs.

BY BARRY NANCE, *Network World* Test Alliance

Building a business-to-business e-commerce site is a lot like revamping the plumbing in a building. Done right, you can increase efficiencies while lowering costs. But if you fowl up the piping, you'll find that your business has sprung a leak — draining your resources in costly maintenance, repair and lost opportunity. With that in mind, we set out to find e-commerce platforms best-suited for business-to-business e-commerce.

We specified that the products support business-to-business transactions via the Internet or extranet – not simply business-to-consumer transactions. We screened products for the common features that would support business-to-business well: publish orders automatically; accept orders via a prearranged schedule or a bidding process; issue purchase orders; track delivery and payment; be customizable via scripts, C/C++ or Java; and use a back-end database such as Oracle, SQL Server, Adaptive Server DB2 or generic Open Database Connectivity (ODBC) data source.

Four vendors accepted the challenge. IBM shipped us a late beta version of its WebSphere Commerce Suite 4.1 and Commerce Studio Developer Edition 4.1. Miva Corp. submitted its Merchant 2.0 and Empresa 3.63 products. Tomato Springs Software Corp. sent its ActiveCommerce Plus 1.0, and Macromedia supplied us with Drumbeat 2000 eCommerce Edition, which it recently acquired when it purchased Elemental Software.

Fifteen vendors declined to let us examine and report on the quality of their products. Microsoft initially agreed to participate, then mysteriously failed to send anything. We concluded from the vendors' skittishness that most are not quite sure what business-to-business e-commerce should look like, or are reluctant to have their products undergo an impartial lab-based evaluation. (Visit our online Buyer's Guide for comparative information about those 15. Go to www.nwfusion.com/ecomm2000.)

All four tools we tested can create storefront Web sites. Business-to-business e-commerce interfaces were a different story, however.

Building e-business interfaces

With its sophisticated and highly scalable approach to e-commerce, IBM's WebSphere Commerce Suite proved the best tool for establishing business-to-business e-commerce interfaces. It required some programming expertise, but we found the result well worth the effort. WebSphere Commerce Suite and Commerce Studio let us create virtually any kind of e-commerce interface we wished, from simple catalog-based e-business supplier links to XML-based application-specific data transfers.

WebSphere Commerce Suite and Commerce Studio together contain everything you could possibly need to build a sophisticated e-commerce Web site. Commerce Suite is an integrated combination that includes a customized Apache Web Server; WebSphere Payment Manager; a DB2 relational database; Net.Data, a Web-oriented macro language and database access tool; WebSphere application server, middleware that helps an e-commerce site scale across multiple servers; a JDK 1.1.7B Java run-time environment; Netscape Communi-

BLUE RIBBON AWARD

Product: WebSphere Commerce Suite and Studio Developer

Vendor: IBM

WebSphere Commerce Suite and Studio Developer win our Blue Ribbon Award for being intuitive, fairly easy-to-use tools that let businesses create virtually any kind of e-commerce interface.

SCORECARD

	IBM WebSphere Commerce Suite 4.1 and Commerce Studio Developer Edition 4.1	Macromedia Drumbeat 2000 eCommerce Edition	Miva Merchant 2.0 and Empresa 3.63	Tomato Springs ActiveCommerce Plus 1.0
Features (30%)	9	8	7	4
Manageability (25%)	8	7	6	6
Performance (20%)	9	7	6	7
Reporting (15%)	8	7	7	6
Installation (5%)	6	7	5	6
Documentation (5%)	6	8	5	5
Total	**8.30**	**7.35**	**6.35**	**5.55**

VALERIE SINCLAIR

cator, a Web browser; and XML templates. Developer Studio adds Store Creator; an applet designer; Visual Age for Java, a programming tool; a Java debugging tool; IBM HotMedia, a Web page visual design tool; and a CD-ROM of pictures and photographs.

We found WebSphere Commerce Suite and Studio to be serious tools for developing Web-enabled e-commerce sites and interfaces. Fortunately, they're intuitive and fairly easy to use. The tools made quick work of creating e-commerce Web sites that we connected to the included DB2 relational database management system via Net.Data. (WebSphere Commerce Suite also works with Oracle8.)

We tested the products by simulating a grocery store extranet (see "How we did it," right). In one test, we assembled a simple site that our simulated grocery store suppliers could use. With a mouse click, suppliers could bid on outstanding orders and promise fulfillment. In a more complex test requiring quite a bit of Java programming, we designed a grocery store site and several supplier sites that exchanged XML interface files to communicate order fulfillment, delivery information, invoices and payment data.

IBM could have made this job easier if it included its Message-Oriented Middleware (MOM) product, MQSeries, as part of WebSphere Commerce Suite. With an Internet-aware MOM tool, we could have avoided the design and programming of the dialog control necessary to ensure the delivery of the Internet messages our grocery store application sent. Nonetheless, WebSphere Commerce Suite and Studio win our Blue Ribbon Award for the relative ease with which they enabled us to build business-to-business e-commerce interfaces.

In contrast to WebSphere Commerce Suite, Macromedia's Drumbeat 2000 required almost no programming expertise, but our tests showed it couldn't produce Web sites or interfaces as sophisticated as those built with WebSphere Commerce Suite. Drumbeat 2000 eCommerce Edition is tied inexorably to Microsoft's Active Server Pages (ASP) technology for dynamic Web page creation, which limits its scalability to a single platform, Windows NT. On the other hand, you can reasonably expect that an expert Microsoft Web platform programmer can tightly integrate a Drumbeat 2000 application with such Microsoft technologies as Transaction Server, Active Data Objects, Component Object Model (COM) and Distributed COM. However, Macromedia does not include a set of developer tools for creating sophisticated transactional Web-based applications as IBM does with WebSphere Commerce Suite and Commerce Studio. Then again, that disparity is reflected in price: Drumbeat is priced at $499, while WebSphere costs about 10 times as much.

For simple tasks, WebSphere Commerce Suite's wizards help programmers generate dynamic Web pages, Java Server Pages (JSP) scripts, JavaBeans, SQL statements and Java servlets. The product's applet designer is based on NetObjects' BeanBuilder technology, and the included NetObjects' ScriptBuilder tool helps designers specify the layout of XML and Wireless Markup Language interface files. WebSphere Commerce Suite's design tools let us visually create e-commerce sites, maintain catalogs, set up shipping data, segregate grocery suppliers into groups (produce vs. meat, for instance), lay out our Web pages and define the relationships between the database and the Web pages and interface files.

Drumbeat 2000 uses ODBC to work with a variety of relational databases, and its site-creation and data access wizards are slick and well-designed. We especially liked the DataForm wizard, which built ASP-based Web pages containing drop-down menus, list boxes, checkboxes, radio buttons and text edit boxes when we connected it at design time to an already-populated Oracle database of catalog items.

Impressively, at run time, the generated ASP script navigated multiple rows of data as we scrolled forward and backward through the database. We found the Site Creation and Publishing wizard a painless but tedious tool for setting up storefront Web sites. To produce XML-formatted interface data from within Drumbeat, we programmed VBScript statements by hand.

Miva's Merchant basically just gives you a Web storefront-creation tool, while the Empresa Web server add-on brings an ASP-like server-side script capability to your Web server. The proprietary Miva Script language looks like a mixture of VBScript and XML. The Miva Engine within Empresa acts as a preprocessor for Web pages containing script statements and HTML. The scripting language offers ODBC access to relational databases and, if you don't have a relational DBMS, it has an internal xBase data access and data indexing mechanism.

The Merchant component consists of catalog access, product maintenance, category management, shopping basket, merchandising, and order and credit card processing. Over the Web, a central administrator can maintain multiple stores and delegate specific store maintenance functions to assistants. Merchant is itself written in Miva Script.

Miva Script uses what Miva calls Open Web Document Connectivity to provide access to Simple Mail Transfer Protocol and Post Office Protocol 3 for sending and receiving e-mail from within a Miva-based application. Miva Script programs can also dynamically create or modify HTML for the Web server to deliver to a client browser. Within a script, HTML-like tags and system variables control database access as well as the content of Web pages, and blocks of script language statements can iterate through multiple database rows or HTML elements.

Like Miva's products, Tomato Springs Software's ActiveCommerce is essentially a simple Web storefront tool with few business-to-business features. It consists of three components: Catalog Maker, Order Maker and Order Taker. Catalog data resides in Microsoft

Continued on page 84

How we did it

We created a Web-based virtual grocery store and multiple Web-based virtual suppliers. This would act as our business-to-business test environment.

We used the catalog products to build a database of more than 100 grocery items, testing their features by reordering those items from the store's suppliers. As the inventory of each item fell below a threshold, we published its specifications, quantity needed and delivery terms on an extranet. The lab-based supplier software applications we programmed responded by accepting or bidding for orders, arranging for delivery and issuing invoices. The store issued purchase orders, tracked deliveries and paid for the items. The store and the supplier applications we built produced reports showing current and completed transactions, fast- and slow-moving items, price trends and order status.

We looked for design-time features that helped us quickly build our business-to-business e-commerce interfaces. We wanted products to send and receive order, delivery and invoice transactions, preferably using XML. And we considered how well each could accommodate unique bidding, ordering and delivery needs.

We gauged how easily we could use scripts, C/C++ or Java programming to customize a product's behavior, and judged each product's integrated database for relational access, responsiveness, flexibility and robustness.

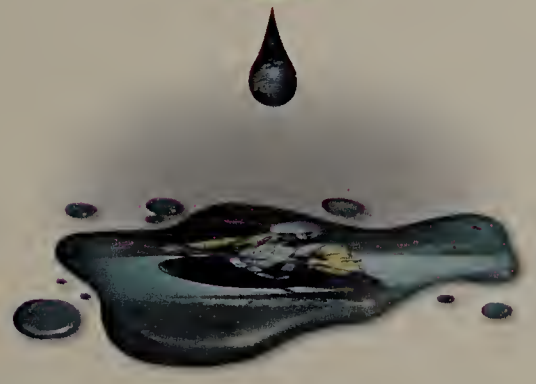
Preconfigured components for managing catalogs, bids, orders, shipping and payments were a plus, as were useful features such as the ability to specify minimum and maximum acceptable item prices, modify an interface's configuration without having to take it offline, accept a range of electronic payment types and produce useful reports.

At run time, we looked for correct and consistent processing of sales transactions as well as reliable operation. We also examined the network traffic each product generated, using Network Associates' Sniffer software to discover packet sizes, traffic densities, network utilization and time intervals between requests and responses.

In the performance tests, 30 clients concurrently supplied items to our e-commerce site while we closely monitored response times, server workloads and network utilization. For all tests, we rebooted the Web server and the clients to eliminate the effect of caching on performance.

We ran each product on Windows NT Server 4.0 with Service Pack 5, using a Gateway 2000 NS-8000 computer with 333-MHz Pentium II dual processors, 512M bytes of RAM and three 9G-byte SCSI RAID drives. A 100-MHz Fast Ethernet LAN was our extranet, and the 30 client PCs were a mixture of NT Workstation 4.0, Windows 98, OS/2 Warp 4.0 and Macintosh System 8 platforms.

— Barry Nance



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Continued from page 82

Access MDB files. We used ActiveCommerce to publish a catalog from which clients could order items, but the product did not verify in-stock quantities or handle electronic payments.

Managing the e-business

WebSphere Commerce Suite, Drumbeat 2000 eCommerce Edition and Miva Merchant include built-in tax and shipping calculations, several merchandising options, such as discounting, cross-selling and frequent shopper points, and automatic order confirmations. Additionally, WebSphere Commerce Suite supports the AVP Taxware system for calculating and supplying accurate U.S. and Canadian tax rates. Interestingly, Macromedia recently announced a version of Drumbeat 2000 that uses JSP to work with the IBM WebSphere application server environment and DB2 relational DBMS.

For security, all the products except ActiveCommerce offer the use of Secure Sockets Layer. WebSphere Commerce Suite and Drumbeat 2000 additionally can use the Secure Electronic Transaction (SET) protocol to protect credit card transactions from prying eyes and malicious damage. In the lab, WebSphere Commerce Suite and Drumbeat 2000 sent correctly formatted SET transactions to a test payment gateway for decryption, translation, verification and authorization.

Miva Merchant-based applications can access United Parcel Service computers through the Web to calculate shipping fees worldwide. Of the four products, only WebSphere Commerce Suite supports the Joint Electronic Payment Initiative and electronic data interchange standards.

Within WebSphere Commerce Suite and Drumbeat 2000, you can specify that users must identify themselves, either by preregistration through the site administrator or via a registration process. In

NET RESULTS

WebSphere Commerce Suite 4.1 beta, and Commerce Studio Developer Edition 4.1 beta (needed for Web site development)
IBM
(800) 342-6672, (914) 765-1900
www.ibm.com/software/webservers/index.html
Price not available. Previous release of WebSphere Commerce Suite, called Net.Commerce, was $4,749. WebSphere Studio Developer was $425.
Pros: Extremely capable site creation and business-to-business interface definition.
Cons: Requires some programming expertise.

Merchant 2.0
Empresa 3.63 (scripting engine needed to run Merchant 2.0 e-commerce scripts)
MIVA
(858) 490-2570
www.miva.com/products
$895 per CPU/domain
Pros: Miva Script language, via Empresa, adds ASP-like server-side features to non-Microsoft Internet Information Server Web servers.
Cons: Much more sophisticated than ActiveCommerce, but still just a storefront creation tool.

Drumbeat 2000 eCommerce Edition
MACROMEDIA
(800) 457-1774, (415) 252-2000
www.macromedia.com/software/drumbeat
$499
Pros: Easy-to-use wizards for site creation and data access.
Cons: Relies on Microsoft Active Server Pages (ASP) technology for emitting dynamic Web pages.

ActiveCommerce Plus 1.0
TOMATO SPRINGS SOFTWARE
(888) 968-8772, (949) 459-6981
www.tomatosprings.com/products/products.htm
$5,995 (Plus edition), **$9,995** (Enterprise edition)
Pros: Uses purchase order metaphor rather than a shopping cart.
Cons: Really just a storefront catalog display and rudimentary order taker.

our tests, the e-commerce software products used the personalization data to sort suppliers demographically, track histories, and group suppliers by criteria such as on-time delivery and bid price.

In addition to Internet-based access, ActiveCommerce supports dial-up connections from customers. Instead of a shopping cart, ActiveCommerce uses a purchase-order metaphor to interact with customers. ActiveCommerce has the ability to create reusable templates of typical orders to increase customer efficiency.

The product also has differential pricing by customer or class of customer. You can build different pricing models into the ActiveCommerce catalog and include a unique, private key with each model. ActiveCommerce prompts each user to enter his or her catalog key to know which pricing model to reveal.

While ActiveCommerce was the least capable business-to-business e-commerce product we evaluated, it did offer a simple-to-use data import tool for updating its catalog from comma-delimited external files. Moreover, Tomato Springs says that ActiveCommerce integrates with the Platinum for Windows accounting system for inventory control and order tracking.

According to Tomato Springs, it replicates catalog data from the accounting system's inventory master into its own data store and routes sales orders to the accounting system's order-entry module.

Miva Merchant's installation process is difficult to follow and, for license verification via a Miva Web site, requires that the Merchant server be connected to the Internet. Installing WebSphere Commerce Suite from its eight CD-ROM disks was tedious but straightforward. Drumbeat 2000's and ActiveCommerce's installation steps were quick and simple.

Find it online: www.nwfusion.com

Find your catalog server: For a detailed comparison of dozens of catalogs, surf our Interactive Buyer's Guide.

DocFinder 7036

Miva Merchant's documentation consists entirely of online manuals, the content of which is obscure and incomplete. ActiveCommerce comes with an amateurish quick-start manual of folded 8 1/2-by-11 laser-printer-produced pages, while Drumbeat 2000 and WebSphere Commerce Suite have professional-looking, comprehensive and well-written printed manuals.

Performance is important for high-volume sites that need to be as responsive as possible to business partner orders and delivery data. We found WebSphere Commerce Suite not only the fastest business-to-business e-commerce product but also the best at scaling across multiple servers.

Both Drumbeat 2000 and ActiveCommerce lagged behind WebSphere Commerce Suite in our tests, typically taking about 50% more time to respond. In one test that used the Sniffer's network packet time stamps to reveal when requests and responses appeared on the network wire, a WebSphere Commerce Suite transaction took three seconds to complete, while similar Drumbeat 2000 and ActiveCommerce transactions required about five seconds. Miva Merchant, written in Miva Script, proved the slowest of the lot, taking nearly seven seconds to complete the transaction.

Relationships between businesses are typically complex, and you'll want to analyze that complexity carefully before plunging into Internet-based e-commerce with your business partners. When you decide to build those interfaces, we strongly suggest you allocate some programming effort to the project and take a close look at IBM's WebSphere Commerce Suite and Commerce Studio.

Nance, a software developer and consultant for 29 years, is the author of Introduction to Networking, *4th Edition (Que, 1997) and* Client/Server LAN Programming *(Que, 1994). You can contact him at barryn@erols.com.*

Nance also is a member of the Network World *Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.*

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Brian Hall, vice president of procurement at Visa, is comfortable participating in Ariba's e-marketplace — but security [illegible]

E-marketplaces ease procurement headaches.

BY AMANDA MITCHELL HENRY

DIGITAL EMPORIUM

Your company can buy almost anything over the Internet, but is the ordering process as good as it gets?

Probably not. Until recently, Internet-based procurement was necessarily sloppy; it required juggling separate catalogs and transaction processes for each online supplier. Each catalog had to be maintained, and users couldn't aggregate purchases to get the best volume prices. Such catalogs also made shopping difficult, whether looking to buy raw materials or software products.

Enter digital marketplaces — the latest wave in business-to-business commerce — where buyers and sellers trade money for goods over a secure procurement network. Digital marketplaces, also known as exchanges, have hit full speed in the past nine months.

You can build a private marketplace for your company or join semipublic marketplaces. The latter are ad hoc purchasing consortiums hosted by a third party. These hosts may be marketplace software vendors, such as Ariba or CommerceOne, that offer a variety of goods for sale. Or they may be virtual companies, such as Chemdex, Global Food Exchange and VerticalNet, aimed at a vertical market.

In any case, cost savings abound. By aggregating buyers into a single site, sellers can afford to offer bigger discounts.

"Digital marketplaces are where the action is," says Jack Staff, chief Internet economist at Zona Research, a market research firm in Redwood City, Calif. Published pricing and increased competition among sellers will drive prices down, and that's good for buyers, he says. Ultimately, it's good for sellers, too, because lower prices will be offset by higher volumes, provided sellers participate in multiple marketplaces, Staff says.

If you build a private system, purchase orders can be generated with a click of the mouse. Orders can then be routed through required approvals, eliminating costly human administrators. By putting all suppliers in a central Web-based catalog, your purchasing department can easily compare prices.

Savings are further achieved by aggregating corporatewide orders to the same suppliers. This makes it easier to negotiate discounts. And you can pump all exchange-related procurement data into corporate accounting or enterprise resource planning applications for budgeting, scheduling and other analysis.

In fact, users such as Hewlett-Packard have found a company can reduce its administrative costs a hundredfold. Since June, HP has been buying goods over Sunnyvale, Calif.-based Ariba's digital marketplace, one of several online exchanges that have sprouted up over the past year. For HP, Internet-based procurement has expanded from just office supplies and computers to: software; maintenance, repair and operating products; network equipment; marketing print services; consulting services; and even temporary labor.

"Before, we had a couple of sites that were operated manually with a custom Web site for every commodity," says Gregson Siu, global solutions center manager for HP's operation procurement organization in Palo Alto. "Now anything I can buy, I can put in a single catalog," he says.

As of December, HP had deployed the marketplace to about 500 employees, pausing its rollout in January as a Year 2000 precaution. The company is now back on track with deployment to the rest of its North American operations, meaning approximately 80,000 employees. HP calculated it was spending about $125 per purchase order in labor fees. When its rollout is completed in the next few weeks, Siu estimates it will cut that amount to $10 per purchase order, by reducing administration. The kicker is HP will save an additional 5% simply by restricting purchases to prenegotiated catalog items and by buying these items in volume, Siu says.

DAVID FUWERS

Restrict the rogue

With digital marketplaces, buyers may purchase directly from a catalog using their company's prenegotiated pricing. This frees them from a lengthy approval process. It also prevents what is known as "rogue buying," in which users stray from approved products to find a better deal. In truth, unsanctioned purchases actually increase costs because they aren't tracked by the company. So they would be excluded from volume discounts and typically require manual administration — a person must see to approvals, purchase orders, system input and other issues.

With marketplaces, users can be restricted to seeing only approved items. Aggregation and procurement policy enforcement are automatic.

This isn't as restrictive as it sounds, nor does it mean having to recreate every supplier's e-commerce site. Like a personalized shopping portal, a marketplace can host links to approved suppliers' sites, serving up contracted prices. For instance, marketplace buyers can link to Dell's www.dellware.com and get their own prenegotiated prices rather than working through a Dell-created catalog on the Ariba network. By ordering via the marketplace, the transaction, along with all its administration and integration with back-end systems, is done by the marketplace.

As for the transaction itself, most marketplaces offer a choice of formats, such as electronic data interchange, fax, e-mail or XML. The latter is the most popular method, particularly for those without legacy online procurement systems.

Easy to join, hard to leave

Marketplace options are vast and growing bigger. There are marketplace specialists including Ariba, Clarus, CommerceOne, Intelisys Electronic Commerce, Trilogy Software and TimeØ, a Perot Systems business. Likewise, ERP powerhouses have jumped in, including SAP AG with its mysap.com network and Oracle with Oracle Exchange.

Plus, vertical exchanges have cropped up for virtually every industry. Some sites, such as Verticalnet.com, even host numerous vertical exchanges. Each vendor makes money by marrying buyers with sellers, but how they assess fees varies. Ariba, for example, charges per transaction, but the company and its buyers keep the fee a closely guarded secret. In contrast, Clarus uses a subscription model, charging $995 per month.

Vertical sites typically operate under an auction model in which a request for proposal is issued and several suppliers bid on it (see story, page 91). The attraction to sellers is increased access, far beyond traditional sales methods and even farther beyond what their existing network infrastructures can handle, says Dave Reinke, vice president at Braun Consulting, a Chicago marketplace consultant, which helped create BidBuyBuild.com, a marketplace for the construction industry.

"Suppliers don't have enough exposure to all contractors, and contractors don't get the full breadth of suppliers because they are limited by the bandwidth of their existing sales networks," he says.

Marketplaces also vary in how they process transactions. Some, such as Ariba, do the processing on their networks, inside their own firewalls, and others, such as Clarus, put that task in the users' hands.

"We put a portal out there, just like the Ariba portal or the CommerceOne portal, and we provide a lot of profiling information, catalog management services and the ability to do commerce between buyers and suppliers," says Steve Jeffery, president and CEO of Clarus. But, he says, Clarus doesn't process the transaction itself.

While your company today would need to join two separate digital marketplaces — a horizontal one to procure office supplies and a vertical one to buy raw materials — expectations are that these two worlds will soon merge. Horizontal digital marketplaces have begun to set themselves up to offer vertical exchanges as a subset of their existing sites. "The final step is to link these exchanges with smaller grass-roots exchanges like Chemdex and e-STEEL ... to make a single integrated buying experience," says Lou Unkeless, senior director of applications marketing at Oracle.

To narrow down the choices, start by assessing the number of transactions your company will complete each month. That will allow an apples-to-apples comparison between fee-based and subscription services.

Also, while the list of participants on a network is important, don't be overly concerned with it. Each vendor is feverishly trying to populate its network with as many buyers and suppliers as possible by making joining as easy as launching a browser. Within weeks after it launched last fall, Oracle claimed to have 270 companies signed on to be sellers and more than 400 customers. By the end of January, it claimed that it had 950 companies registered as participants. Clarus claims to have 30 companies implementing its framework today, totaling 200,000 employees with access to its network. Clarus also claims to have collected several hundred manufacturers and resellers participating with sellers on its network.

Of course, don't let the easy-to-join guise fool you. Choose a marketplace carefully, particularly if you must invest in the vendor's software and integrate it with existing network and back-end systems. "This is the classic relationship between buyer and seller: They want to make the setup cost low and switching costs high. Every change is going to cost a lot, and it's going to be extremely painful," says Rob Kelley, vice president of e-business development at Broadreach Consulting in Wayne, Pa.

Security gotcha

While users say integrating marketplace software with back-end systems is fairly simple, they also point out that there are some gotchas.

One is security, a major concern for Visa International in Foster City, Calif. A year ago, it opted to join Ariba's marketplace to replace a manual procurement system for office supplies, and ran into a conflict with its security policies. The concern surfaced over Ariba's model of processing transactions on its own network behind the Ariba firewall. That meant Visa users had to send sensitive buying data over the Internet.

"All of a sudden, we were going to have purchase orders sent via the Internet and have people going outside the company's firewalls," says Brian Hall, Visa's vice president of procurement. Ultimately, Visa adjusted its policy to use Ariba's marketplace, but first the company learned all it could about potential vulnerabilities.

Another gotcha is that these marketplaces may require beefing up your infrastructure. Visa, for instance, purchased two Windows NT servers in order to run Ariba's software in development and production modes. Savings on administration costs more than offset the price of these infrastructure upgrades. In the year since its deployment, Visa has reduced its labor costs by 66% and increased the cycle time for processing requests by 21%.

Visa's procurement network is currently accessed by 2,000 employees, but this quarter the company anticipates rolling it out to all 4,000 domestic employees. Visa expects to achieve its return on investment within two years.

However, maintenance of a marketplace is more than just routine software administration, Hall warns. It requires constant monitoring of procurement policies and organizational structure to ensure that the system's automatic workflow features remain accurate. "From the IS perspective, a project like this really needs to have dedicated resources for ongoing management of the software," Hall says.

Vertical or horizontal, digital marketplaces are coming on fast, and they appear to be offering buyers and sellers an equal array of benefits. Efficiencies and cost savings have already been seen. The only factor left to prove is whether businesses will turn to them en masse.

Henry is a freelance writer in San Carlos, Calif.

A SAMPLING OF THE DIGITAL MARKETPLACES

Some marketplaces are horizontal services, selling a variety of products relevant to any business. Others are services aimed at specific vertical markets. Several vendors simply sell e-marketplace software, so users can build their own.

Horizontal marketplaces*	Vertical marketplaces	Marketplace software vendors
Ariba	Instill (Food)	Oberon
Clarus	Chemdex (Chemicals)	Time
CommerceOne	BuildNet (Construction)	Trilogy Software
Intelisys	SupplierMarket (Parts)	Scalar Solutions
Oracle Exchange	VerticalNet (Variety)	
SAP (mysap.com)	Pharmabid (Pharmaceuticals)	
	DirectAG (Agriculture)	
* Also sell marketplace software	Neoforma (Health care)	

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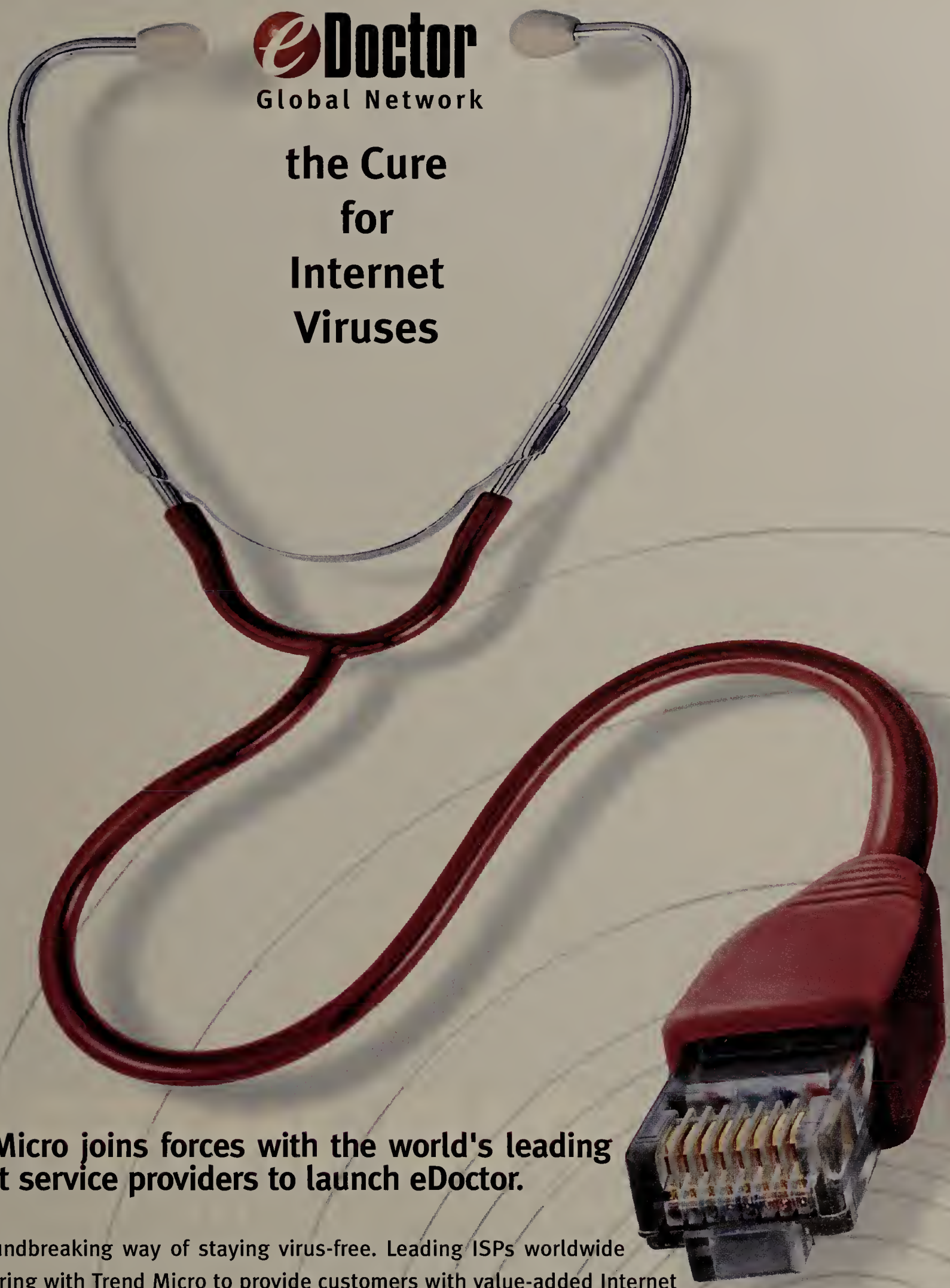

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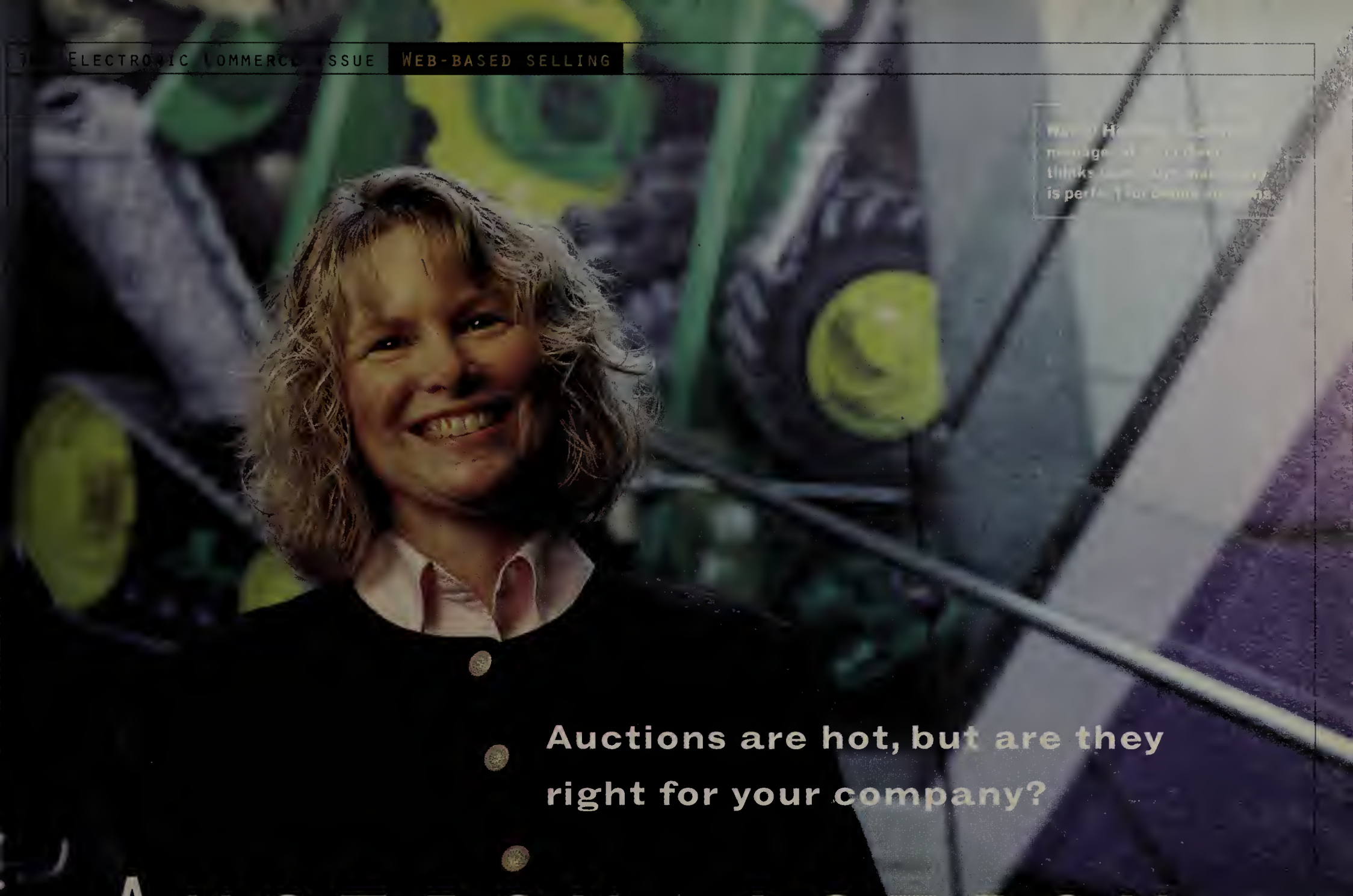

Auctions are hot, but are they right for your company?

AUCTION ACTION

BY SHARON GAUDIN

Consumer goods aren't the only hot items on online auction blocks. In fact, on any given day, you'll find thousands of networking products up for bid on eBay. And business-to-business auction sites are attracting a legion of followers, moving truckloads of products and forging previously unattainable partnerships around the globe. Best yet, the IT experience you'll need to engage in auctions is easy to come by.

Industry watchers agree that business-oriented auctions are one of the hottest new online trends, drawing participation from small businesses and Fortune 500 companies alike. In fact, business-to-business online auctions handled $109 billion worth of transactions in 1999, and that number is expected to jump to $1.3 trillion by 2003, notes Forrester Research, a market research firm in Cambridge, Mass.

The rocketing interest, coupled with large transaction numbers, have analysts and user organizations putting their muscle, and their dollars, behind this burgeoning technology. Procurement people who have access to auction systems rave.

"It's a fantastic tool," says Michael McGaugh, senior market supply manager for The Dow Chemical Co., an $18 billion chemical giant in Midland, Mich., with 35,000 employees worldwide. "It allows us to diversify our supply base and create a dynamic marketplace for buying and selling. Now, I can reach a competitive market price very quickly and with much less effort than phoning around and taking bids manually. I can do it in a matter of hours instead of a matter of weeks."

Dow is a good example of why business-to-business auctions are becoming a hot avenue for buyers and sellers. As a seller, Dow uses auctions to meet new customers. As a buyer, it uses online auctions to find lower prices on the tons of raw materials and packaging the company needs to make and ship its products.

McGaugh says he routinely saves 2% to 5% on purchases through online auctions and sometimes as much as 20%. That's

GOING ONCE, GOING TWICE . . .

Some samples of what's available on Web auction sites.

Item	Price	Auction site
Two Cisco 2503 routers plus cables, memory and more	$2,025	eBay
3Com SuperStack II Switch 3300	$405	eBay
Kalpana ESP 1500 Ether Switch	$197	ITParade

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STEVEN CURTIS

because bidding pressure can drive down the costs of buying from new suppliers, particularly for commodities such as packaging, auctioneers contend.

"An oat company might have all these procedures in place to get the best price on oats, but it doesn't think about what it pays for industrial supplies. If it pays $200 million a year and can save just 10%, that's $20 million," says Paul Baier, CEO of PurchasingCenter.com, a 6-month-old online auction company in Burlington, Mass.

It's no wonder that online auctions are quickly proving their value. As a sales system, they save time and money, bring in new customers and suppliers, and extend corporate reach from one end of the globe to the other.

The business case can be so strong, in fact, that you'd be wise to begin experimenting with auction technology and investigating third-party hosted sites. If internal users haven't discovered auctions already, you could be the hero by bringing them into the company.

Still, as with any fledgling venture, you're likely to find the technology doesn't yet provide a perfectly paved road. Some vertical markets may not be ready. And you may have to improve infrastructure to do it in-house, or hire out.

Around the globe

The Internet auction is a natural way to meet new partners while eliminating the protracted sales process. A company looking to sell a product can put it up for bid online, noting a minimum price and a cutoff date. Or a company looking to buy can tell suppliers what it's looking for and then wait for bids.

Unlike traditional auctions, with the bidders gathered in a physical location, online attendees can participate from around the globe, 24-7.

Find it online: www.nwfusion.com

DocFinder 7034 — Where to get in on network equipment auctions.

Reaching new customers is one of the guiding reasons that John Deere Co. built an auction site, says Nancy Headley, operations manager for the farm equipment manufacturer in Lenexa, Kan. John Deere has been helping its 1,600 North American dealers auction off used equipment since last October. It's hosting a site (www.machinefinderauction.com) with IT help from OpenSite Technologies, an auction software vendor.

For some industries, auctions already have reached the must-do stage. If you're a network executive in those verticals, you should be examining auction technology and outsourcing options on the double — or you'll be letting competitors reap the cost and customer advantages. Such verticals include computers and electronics, chemicals and motor vehicles, says Keith Pitcher, president of ComAuction, a business-to-business auctioneer in Dowagiac, Mich.

You can begin to get a feel for the process and how it will integrate into purchasing and sales systems by auctioning off used equipment. "Auctioning really comes into play for a unique piece of equipment or any type that may not have a standard, fixed price, such as specialized equipment or something that has been modified. If it's hard to get a book value for it, this is a good way to sell it," Pitcher says.

Along with chemicals, steel and electronics, any old items lying around the stockroom are fodder for online auction experimentation. You probably have some. Approximately $350 billion worth of unused assets are owned by American companies, according to the U.S. Department of Commerce.

By selling off the storeroom's assortment of oldies, you not only turn dust collectors into cash, but also gain a means to engage business-to-business auction technology, evaluate the security needed to allow purchasing agents to bid via your Internet connection and figure out how to integrate payment into your general ledger systems. And you do this without interrupting existing purchasing and sales systems.

Making an auction site successful

Don't just build it; teach people how to use it.

Even the most innate benefits won't stop your pet technology project from bombing if people don't use it. Early adopters say the danger with auction sites is even greater, because auctions aren't quite mainstream e-commerce yet.

So if you build the site, also develop a marketing program that kicks in the moment the site is debugged, advises Nancy Headley, operations manager at John Deere Co., a farm equipment manufacturer in Lenexa, Kan. She speaks from experience.

Immediate results of John Deere's auction site were less than enthralling. Headley wouldn't put a number on John Deere's auction sales from October's launch through January, but did say they were far below 50% of items offered. She remains confident that transactions will grow when John Deere initiates its marketing plan for the site over the next few months. "We've been getting the logistical and technical things right before we do a lot of publicity," she says.

If your company isn't in a hot e-commerce vertical, auctions may be an extremely tough sell. Equipment Exchange Company of America, a $3 million used commercial kitchen equipment merchant in Erie, Pa., moves 250 to 300 pieces a year. It tried online auctions but pulled out after dismal sales deflated its plans.

"We're not mainly an online company," says Bob Breakstone, president of the 21-year-old company. "It was another avenue of marketing our goods. It wasn't that work-intensive. It just wasn't active." Breakstone says the company only sold about three or four pieces of equipment in the four or five months it held the auctions.

There simply wasn't a big enough auction-savvy market for his used kitchen niche, which includes industrial food processors and similar items, he says.

Now Equipment Exchange is putting its efforts into simply featuring items for sale on its home page. But he adds, "It's not inconceivable that we would try again."

Finally, for those who choose to join a third-party site rather than go it alone, make sure the users of the system are trained in the art of auction deal-making. Unlike their consumer counterparts, the goods don't always go to the highest bidder in business-to-business auctions.

Increasingly, they are awarded to those that offer the best all-around business deal.

"We're talking about more than an auction," says Michele Hincks, marketing manager at ChemConnect, a 4-year-old San Francisco Web site that moves bulk loads of chemicals, doing 10 to 15 transactions per week, with an average of $200,000 per transaction. "A seller doesn't have to accept a bid just because it's the highest price. Look at the financing terms or the better shipping options. It gives you room to negotiate. It gives you more flexibility."

And that flexibility means better decisions — and better business, says Tim Minahan, an analyst with Aberdeen Group, a market research firm in Boston.

"People have been doing dynamic pricing, going for the highest bid," Minahan says. "This is turning into dynamic commerce. It goes beyond price. You can take your three top bids and then go offline and check out the other conditions. Lead time, shipping, warrantees, financing terms . . . there's more to business than the best price."

So ensure that the user interface of your auction system serves up more than just prices on the screen. It should allow bidders to see all the conditions of the deal, before they raise their electronic hand with an offer.

— Sharon Gaudin

Afterwards, you'll be in a stronger position to decide if you want to build an auction site, join one or wait.

Take it to the outsourcer

Should you want to begin now, be warned — implementing an auction site in-house will almost certainly cause some bumps on your electronic roadways. ComAuction, for example, found that auction success could mean infrastructure strain. This year-old company auctions any type of new and used equipment from agricultural machines to computer equipment. It reached total sales of $50,000 in 1999 but expects sales to balloon to $50 million by the end of this year.

That thousandfold jump in sales is now forcing infrastructure upgrades, says David Olsen, chief technical officer at ComAuction. Olsen is currently operating ComAuction on two Sun Solaris servers running Oracle8. Next year, he plans to increase the number of servers and each one's capacity. While he hasn't chosen the new servers yet, he knows he'll have to move from his 100M bit/sec Hewlett-Packard ProCurve switch to a gigabit switch at the same time.

Upgrades such as this make outsourcing look like the best route for building private auction sites. This might go against your grain. E-commerce managers overwhelmingly reported that they prefer to rule over their own e-commerce systems, according to a survey of 100 *Network World* readers conducted for this issue. (See E-comm Intelligence Report, page 56). Nevertheless, early adopters say that hiring consultants, working with a hosting firm or even joining an existing site and leaving the whole caboodle in someone else's hands is best.

"Going with a third party brings a level of integrity to it," Dow Chemical's McGaugh says. "The neutrality makes the sellers more comfortable. If I'm hosting the auction, suppliers may not be comfortable that I'm treating everyone fairly. They might think that I'm withholding information from some and giving it to others."

Dow buys 500 to 600 different products by doing its online auctions through ChemConnect, a 4-year-old San Francisco site that auctions chemicals online. And while the company's suppliers have the security of a third-party host, Dow has fewer nuts-and-bolts worries since ChemConnect handles all of the auctions' technical needs.

"I would assume with time we could build these systems, but it's not one of our core strengths," McGaugh says. "It makes sense to build a relationship with a third party that does have these strengths."

Even John Deere, which handles more online auctioning responsibilities than Dow, leans on OpenSite Technologies for hosting and management. Although John Deere may eventually take the site in-house, today it sends the auction information to OpenSite, and the vendor

"Going with a third party brings a level of integrity to it. The neutrality makes the sellers more comfortable." MICHAEL MCGAUGH, SENIOR MARKET SUPPLY MANAGER, DOW CHEMICAL

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posts it online and handles most of the technical needs and problems.

"We just don't have the technical staff for it," John Deere's Headley says.

Third-party online auctioneers may also handle some of the logistical problems for your company. A buyer could ask the auction host to contact sellers and have them attend a private bidding in a secure part of the host's Web site. The seller could name the suppliers, or ask the host to find them. The host may even arrange for delivery, says Jay Hall, vice president of product management and a co-founder of ChemConnect.

"We're able to find buyers and suppliers in places in the world a company might not have had access to before," he says. "You start expanding your supply base and expanding your competition."

With the Internet's extended market reach, the auction is one road that most businesses should plan on traveling soon. You should start looking for potholes in that road today. ■

Switching to dollars

Used network gear selling like mad on online auctions.

Online auctions have become a great way to buy and sell used networking equipment.

"Of all the computer-related equipment we deal with, the hottest is networking," says Robert Davie, founder of ITParade, an online business-to-business auctioneer of refurbished high-tech equipment in Research Triangle Park, N.C. "People are upgrading networks regularly and quickly. Networking equipment turnover is higher than mainframes or midrange systems that tend to sit out there for a while."

Auctioneers explain that companies such as Cisco and Sun Microsystems are using third-party auction sites to sell slow-moving products. But they also note the bigger trend is for user companies, such as Winn-Dixie Stores and AT&T, to use online auctions to sell older equipment once it's been replaced.

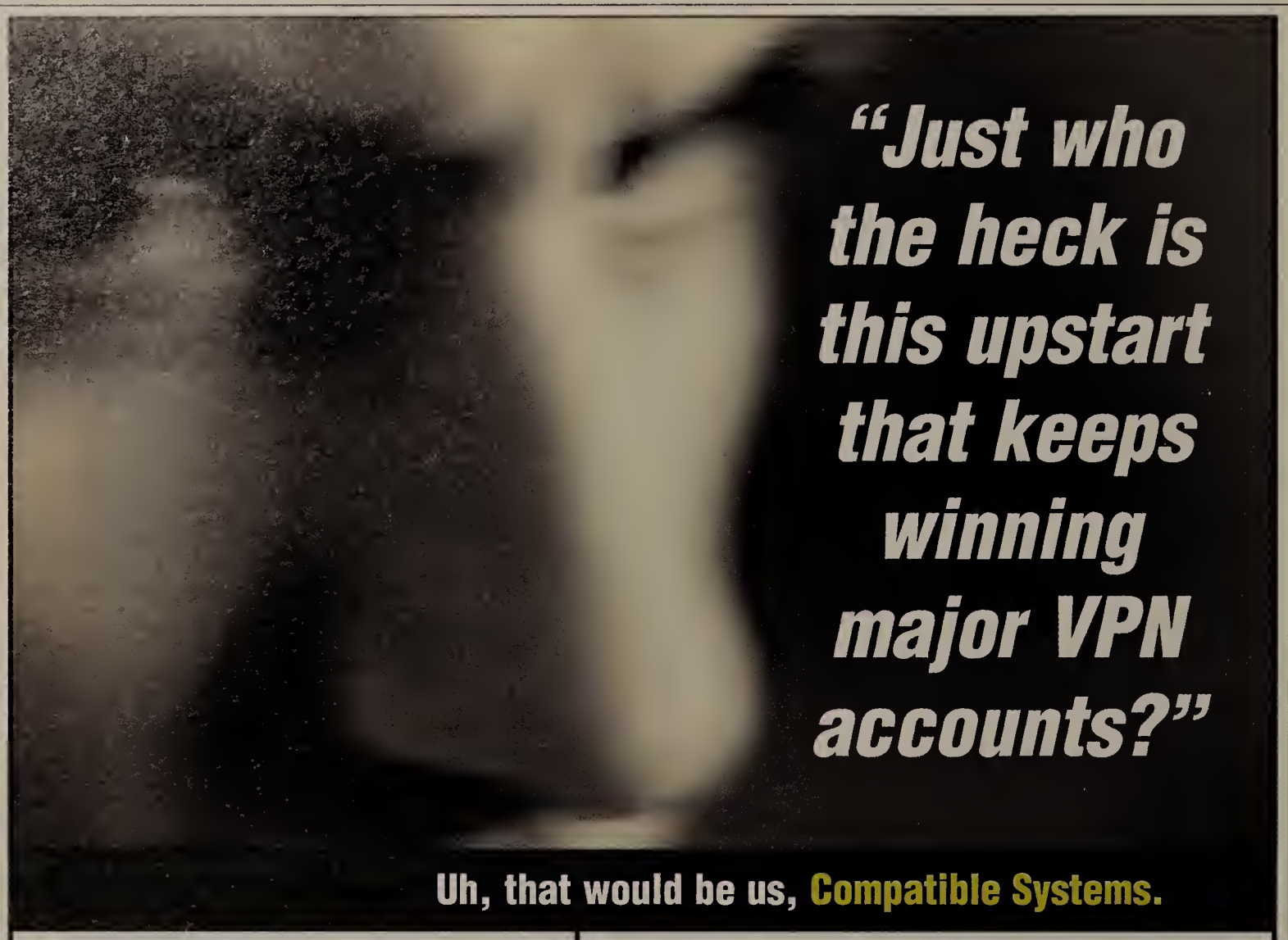
On EarthWeb, an IT business portal, about 1,500 of the 9,000 hosted hardware auctions are for networking equipment, and most are from user owners, says Scott Anderson, vice president of worldwide marketing at the New York firm. Although fewer in number, the transactions represent bigger bucks because networking equipment sells for higher prices than other hardware categories, such as peripherals.

With each incarnation of networking technology, older but useful network equipment becomes impossible to sell via normal channels, say industry players such as Raymond Letulle, chief technical officer of MoaiTechnologies, an online auctioneer in San Francisco. When that happens, don't throw the products in the trash; put them up for bid at an online auction. Auctioneers guarantee you wider reach and help you get maximum bucks.

"We assist in determining what the used market value might be by polling our used networking dealers. Then we help set up a minimum acceptable bid," Davie says.

— Sharon Gaudin

JOHN KACHIK



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SAFE PASSAGE

Digital receipts ensure that a transaction completed is a transaction confirmed.

BY WINN SCHWARTAU

New York, Friday, 2:15 p.m. Network Financial Global has spent four intense months putting together a multibillion-dollar deal. The merger and acquisition lawyers say that the contracts absolutely must be signed before 5 p.m. In addition, the banks must be given full legal authorization to move $450 million in cash, and the clearinghouse must be duly instructed to hand over $4.2 billion in stock to the partners in the deal. If the companies blow this deadline, a $125 million penalty kicks in.

No problem . . . except that one of the required signatories for the three transactions got called to an emergency meeting in London. He thought he'd be back before the deadline, but missed the return flight. Faxed signatures are not allowed, and conventional digital signatures are not acceptable, either, because of the threat of spoofing and the fear of repudiation. The signatures have to carry the full weight of the legal system — just as a hard copy signature does.

Is this penalty going to kick in for lack of a verifiable signature? Not if the fictitious Network Financial Global has a digital receipt system, which will soon carry the legal strength of physical signatures, thanks to the U.S. Congress. The executive in London would merely have to "sign" the appropriate electronic documents, e-mail them to a specified secure server in New York where the electronic signatures are verified, and the deal is done — all in a matter of seconds.

A new industry is brewing around the electronic equivalent of Federal Express. Remember when "it absolutely has to be there overnight" was good enough? That was years ago. Today, Internet-speed has engulfed the planet. Tomorrow is an infinity away — we must have it today. Wait, today isn't good enough . . . we have to have it in less than 30 seconds, or watch dollar signs turn to zeros. And so a cadre of companies have begun to specialize in the "Internet Express" business.

Internet Express companies transmit verifiable and legally empowered electronic documents. Conventional e-mail gets from Point A to Point B in a fairly reliable manner. However, conventional e-mail carries no guarantee that the sender is who he claims to be or that the recipient received the message. In addition, there is no tracking mechanism to locate or identify the status of a message in transit from A to B. Internet Express companies, otherwise called digital receipt product vendors, solve various pieces of this problem.

In a rare moment of clarity on how important the Internet is to business, Congress helped the legal standing of Internet Express documents. On Nov. 9, 1999, the House of Representatives passed the Electronic Signatures in Global and National Commerce Act (HR-1714), better known as E-SIGN. The Senate passed a similar bill, and the president is expected to sign a compromise bill into law early this year.

The E-SIGN bill encourages the use of the electronic medium as an alternative to overnight carriers for day-to-day business needs. In a nutshell, the bill gives contracts or other documents

MAKING MESSAGES UNDENIABLE

Nonrepudiation prevents a sender from denying that he sent a message, and it prevents the recipient from denying that he received a message.

Message origin	Digital receipt provides	Message delivery	Digital receipt provides
Who sent me this communication?	**Confirmation of sender's identity**	Did the intended recipient get the message?	**Confirmation of recipient's identity**
When was the message sent?	**Origination time stamp**	When was the communication received?	**Delivery time stamp**
Was the communication tampered with during transmission?	**Validation of contents**	Was the communication tampered with during transmission?	**Validation of contents**

MARIA REINDIN

signed with digital signatures the same legal validity as paper documents signed with ink. "Millions of Americans are buying everything from cars to stocks online. Electronic signatures will make it easier to conduct business," says Rep. Tom Bliley (R-Va.), chairman of the House Commerce Committee and one of the bill's sponsors.

Driven by brokerages

Legally empowered digital signatures are an obvious prelude to digital receipts. Nonrepudiation is a key benefit. Digital receipts can be used for evidence generation, transfer, verification and retention for countless legal processes. Vendors say their products are particularly appropriate for:

- Legal financial statements: 401(k), bank or brokerage accounts and mutual funds.
- Employee information: payroll, benefits, enrollment and discipline.
- Electronic bills and bill payment processing.
- Shareholder communications: proxy, earnings and SEC filings.

Because of heavy regulation, the brokerage industry has become the proving ground for digital receipts. In particular, brokerages are using digital receipts to comply with SEC Regulation 10B-10, a 66-year-old rule requiring confirmation of trades within 72 hours. Until now, such confirmations were sent via costly snail mail. But digital receipts marry the cost-effectiveness of e-mail with the superior tracking systems of paper deliveries, says Alexandra Ortiz, electronic signature project manager for Datek, an online brokerage based in New York.

Datek conducts 70,000 trades daily. It now processes many trade confirmations electronically using Integrated Messaging Exchange by Tumbleweed Communications of Redwood City, Calif. The system saves the brokerage as much as $70,000 per day.

"You can't just send an e-mail, even over an SSL-protected link, to a customer and have it meet the SEC rules," says Ortiz, who installed Tumbleweed servers at Datek. "When a trade is completed, the customer is notified by e-mail. He comes down to our server, securely enters and accesses the legally compliant trade confirmation. It saves the customer time, and Datek saves on postage, paper and the handling fees associated with conventional paper confirmations. Everyone wins."

Other large brokerage houses with huge trading volumes are starting to get on the Internet Express bandwagon. TD Waterhouse Group will begin using Tumbleweed's digital receipts system for its trade confirmations in April, the company announced last month. Others are sure to follow. All have unique needs for their particular business confirmations, but still have to meet the SEC's 72-hour regulation.

Two ways to go

Organizations can choose between two basic architectures when building digital receipt systems, regardless of their applications: Web server or direct-to-user.

Companies such as CertificdMail.com, Click2Send, ValiCert and Tumbleweed follow the Web server approach. In this model, the recipient is ultimately responsible for checking for waiting transmissions.

In online trading, for example, the process begins when a brokerage notifies the trading client, usually via an e-mail, that a message is waiting on a secure Web server. The trader then surfs to the server, which can reside at a brokerage firm's site or at a server farm run by an Internet Express vendor or other third party.

The trader identifies himself to the server with a personal identification number or similar password mechanism, and retrieves the digitally signed message from the secure server. The brokerage firm is then notified electronically that the trader properly identified himself and retrieved the message. Transaction complete, and the trader cannot deny he got the message.

These systems are like "an electronic notary or an archiving system that can be used in court as the legal equivalent of paper," says David Jevans, vice president of corporate development at ValiCert, a digital receipt vendor in Mountain View, Calif.

Click2Send and CertifiedMail.com offer variations of this model through which customers create electronic online identities at the vendors' servers. With these two hosted services, the sender deposits a digitally signed message at the hosted server and then alerts the user to the waiting message.

Conversely, an enterprise can deploy the direct-to-user approach offered by companies such as PostX in Cupertino, Calif. and Private-Express in San Mateo, Calif. This method is like conventional e-mail: It delivers nonrepudiable messages directly to a software client on the recipient's PC, says Daniel Abbot, marketing

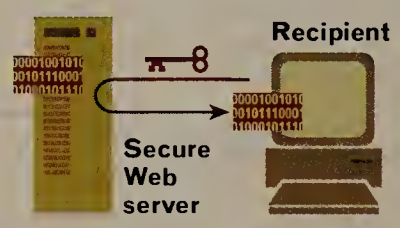
TRUSTED PROCESS

Organizations have two choices when it comes to building digital receipt systems: use of a Web server or the direct-to-user model.

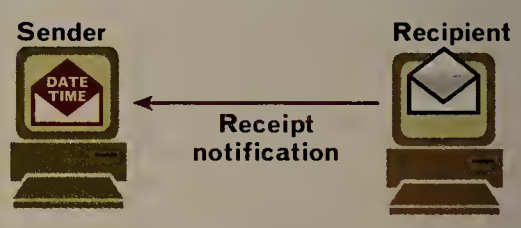
In a Web server-based architecture, the digitally signed message resides on a secure Web server.

1. The sender places a digitally signed message on a secure Web server maintained either by his company or a third party, and then sends an e-mail notifying the recipient that the message awaits.

2. Using a password or other security clearance, the recipient logs on to the secure Web server and retrieves the message.

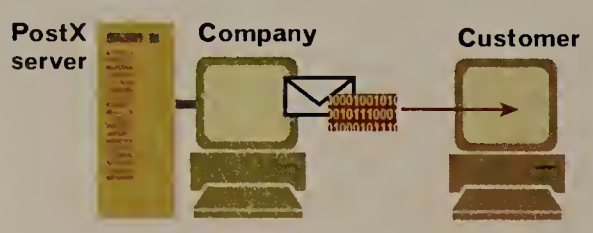


3. Once the recipient opens the message, the digital-receipt system notifies the sender. The notification includes date and time stamps of when the recipient opened the message.

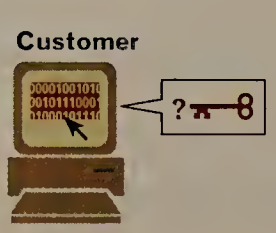


The direct-to-user model, as employed by secure e-mail provider PostX, does not require use of a Web server. Instead, a company such as a brokerage firm or bank and its customers would sign up with PostX for secure information delivery. The company would deploy a PostX envelope server and the customer would need a PostX plug-in.

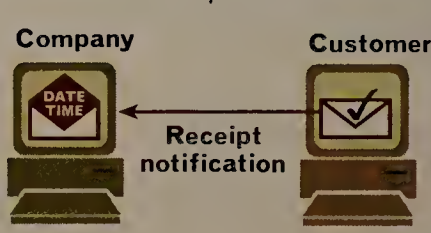
1. The company attaches a confidential document in an e-mail and sends it to a customer who has subscribed to the secure service.



2. When the customer clicks on the attachment, the PostX plug-in launches and prompts for a user password. Upon entering the correct password, the customer gets access to the secure document.



3. When the customer closes the document, the plug-in notifies the sender that the customer has received the document and lets the customer know that notification of receipt has been sent.



director at PostX.

The advantage is that recipients need not take the extra step of logging on to a Web server for their messages. The user subscribes to the service of the company — perhaps a bank or brokerage firm. Software is downloaded to a subscriber's client machine where a secure identity and link is created to the company's main servers. When a trade or money transfer is to be confirmed, for example, an e-mail is sent to the customer.

The "registered mail" is then opened, and the sender is notified of the message's receipt. Voila! Legally recognized communications over the Internet, and neither sender nor recipient can deny participating in the electronic communication.

Dedicated systems

As business-to-business e-commerce applications grow in popularity, more companies will implement digital receipt systems. Electronic orders to manufacturers will carry the same legal weight and obligations as printed purchase orders. Contracts of all sorts can now be generated, agreed upon and enforced in the electronic equivalent of legal stone.

The impact on network performance is negligible for digital receipt systems because the traffic is largely incoming from the Internet, vendors say. Of course, this assumes that the company uses dedicated servers or hires the vendor for that service.

The architecture you choose (Web-based or direct-to-user; hosted or in-house) depends on the size of your organization and the resources you maintain in-house. It also depends on whether you want to tie the digital receipt system into your existing PKI. Of course, initial costs are another factor to consider.

High-end systems are deployed at an enterprise's site. They require not only dedicated servers, but also extensive software deployment, particularly to integrate an existing PKI. The systems can cost between $150,000 and $1 million, ValiCert's Jevans says.

Initial costs can increase if you want to hire the vendor to help you with implementation, but vendors say their assistance isn't mandatory. "Installing a digital receipt system isn't all that difficult. A day or so to implement, then a couple of days of training," Jevans says.

Less expensive alternatives may be available, but then again, you'll be sacrificing enterprise expertise. For example, Click2Send began with services and prices for small companies and individuals but is now marketing to larger corporations and prices its corporate services wares on a case-by-case basis.

A final word of warning: While Congress clears the legal path for digital receipts, it's difficult to say that every vendor is ready for prime time. As usual, the technology available today is only a weeks away from the next generation. When choosing a vendor, test thoroughly.

Schwartau is president of Interpact, founder of Infowar.Com and the author of CyberShock, *a book due out in April. You can reach him at winns@gte.net.*

"Installing a digital receipt system isn't all that difficult. A day or so to implement, then a couple of days of training."

DAVID JEVANS, VICE PRESIDENT OF CORPORATE DEVELOPMENT, VALICERT

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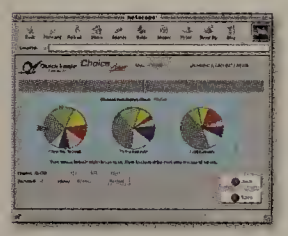

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SIGN-OFF

PICKS & PANS

Our annual look at what's right, and wrong, with e-commerce.

BY JULIE BORT

Technology most responsible for changing an industry: MP3

What started as a way to listen to music over the Internet became an industry threat — and then a whole new market. While plenty of free MP3 music abounds for those willing to use their computers for listening to music, some folks are starting to cash in on the deal. Today, a cool $200 gets you a pocket-sized MP3 player for listening to that free music, or you can buy recordings formatted as MP3 files at certain e-tailers.

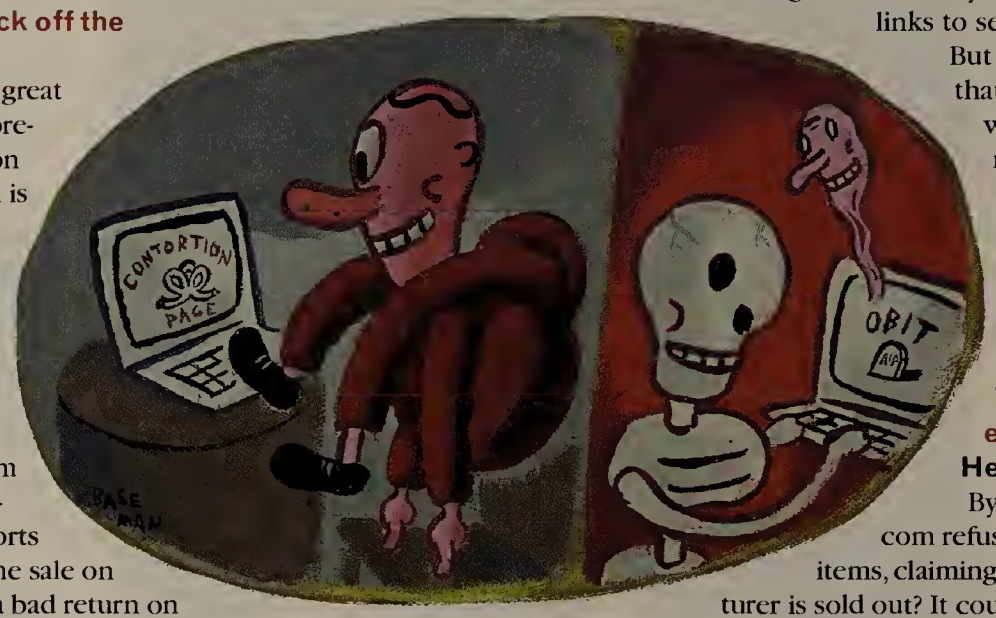
Artists are among the big winners with MP3. No longer shackled by the record companies that distribute their music, new artists can debut themselves. Likewise, seasoned artists can release songs verboten by their labels.

The pinnacle of commercial MP3 sites has got to be www.mp3.com. For more cost-conscious consumers, try www.freemp3files.com or www.mp3.org.

Easiest way to make a buck off the Internet: Great Domains

Think it's time to sell that great domain name you had the foresight to register? Then auction site www.greatdomains.com is the place for you.

True, people have been selling domain names at a profit for years. But the trend has reached epic proportions in the past year. In 1999, Drugs.com sold for $823,000 while Business.com fetched an amazing $7.5 million. Greatdomains.com reports that the average domain name sale on its site is now $14,500. Not a bad return on investment, considering domain names cost just $70 to register.



Site that offers the best incentive: ValueAmerica.com

This business and consumer products site gave away a one-karat, $15,000 Dc Beers Millennium diamond on Jan. 1, 2000, as part of a sweepstakes intended to fill its junk mail database. If you ask me, a big 'ole rock beats free shipping any day.

To qualify for the drawing, visitors had to "join" www.valueamerica.com — meaning they had to fork over their names and postal and e-mail addresses, plus pick a password. These days, joining incentives such as this one have replaced ones for buying. Consumer sites now go for the personal information of those who visit their sites, so they can send out endless notices of special offers.

Site that sells the strangest wares: The Contortion Home Page

Among other twisted goodies, www.contortionhomepage.com sells Ron Dwight's Contortion CD-ROM Volume 3. This collection features more than 6,000 contortion images.

Site that sells the strangest service: ObitDetails.com

For a mere $145, you can submit your obituary to be posted for perpetuity. Of course, if you're not available to write it, ObitDetails.com offers an editorial service and accepts submissions by family members or funeral directors. Several dozen obituaries currently reside on the site.

Best place for an enterprise to find a bargain: UPS.com

That's because United Parcel Service lets you put its Internet Tools on your e-commerce site for free. These tools let your customers check shipping fares and track packages, and find out other relevant tidbits pertaining to order status.

Best place for consumers to find a bargain on the Web: Flamingoworld.com

If a company is offering an online coupon, free shipping or any other incentive, chances are you'll find it at flamingoworld.com. Food, computer gear, clothes, whatever — it's all on this easy-to-navigate site. Plus, you'll find a list of freebies and links to several other deal-offering sites. But if you're looking for cool items that are downright free, check out www.cyberrebate.com. This site not only posts rebate offers, but also actually accepts them and mails you the check. Many rebates are so big, they end up covering the cost of the item and its shipping.

Worse reaction to e-commerce success: Hershey Foods

By Dec. 15, 1999, www.hersheys.com refused to vend anymore Christmas items, claiming it was "sold out." The manufacturer is sold out? It couldn't make more? Still, I suppose this tops archrival Nestle, which doesn't sell chocolate at all in the United States via its site. A chocolate lover's best bet remains Godiva.com, where for a mere $375, you could have bought a 12-pound, 421-piece Millennium box.

Company most notably absent from e-commerce: Safeway.com.

In fact, the grocery store industry in general is pretty much snoozing through the e-commerce revolution. While you can buy most groceries over the Web, even perishables, you just can't buy them from many of the big grocery chains. Instead, you have to go to specialty sites, such as Fruit Over Night (www.fruitovernight.com) and Omaha Steaks (www.omahasteaks.com).

To its credit, the Safeway.com site has some cool features, such as a weekly menu planner and the ability to compile and print out your grocery list. But why not simply let virtual shoppers submit that list, pay for the order online and then pick it up at a local store or have it shipped? Grocery stores have got to be one of the few enormous consumer channels around that haven't seized the Web. And the dot-com companies are moving in. Priceline.com sells groceries over the Web in several metro areas, as does Groceries Express (www.vernors.com).

TO THE RESCUE

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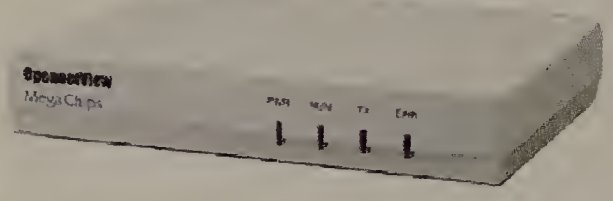
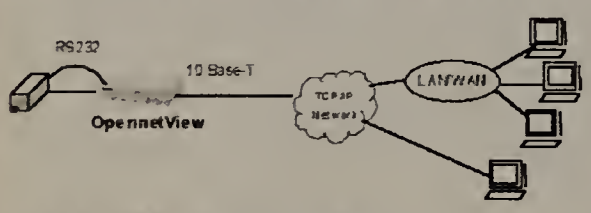
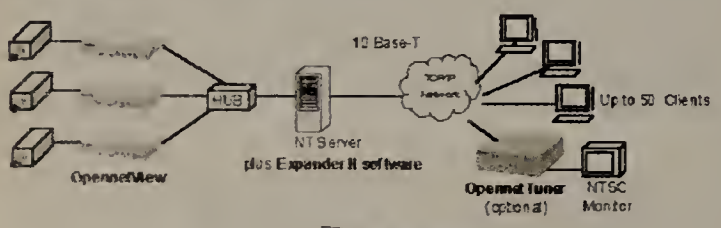


Remote monitoring with camera control ...



Broadcasting live video ...



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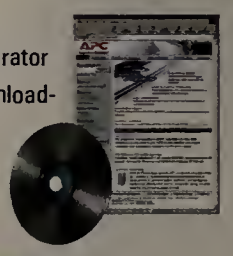

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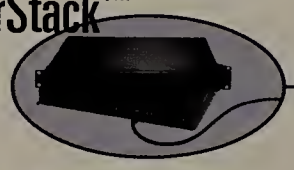
PowerStack™



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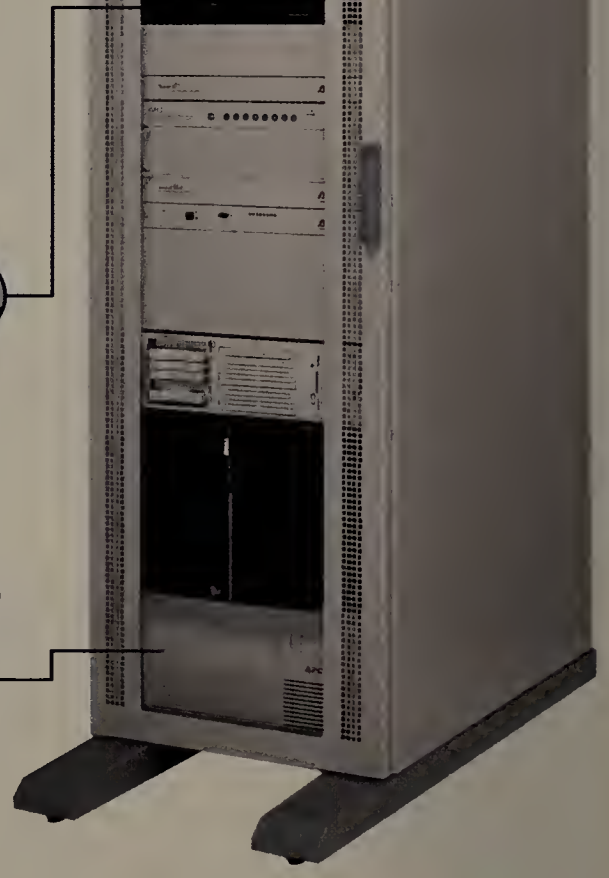

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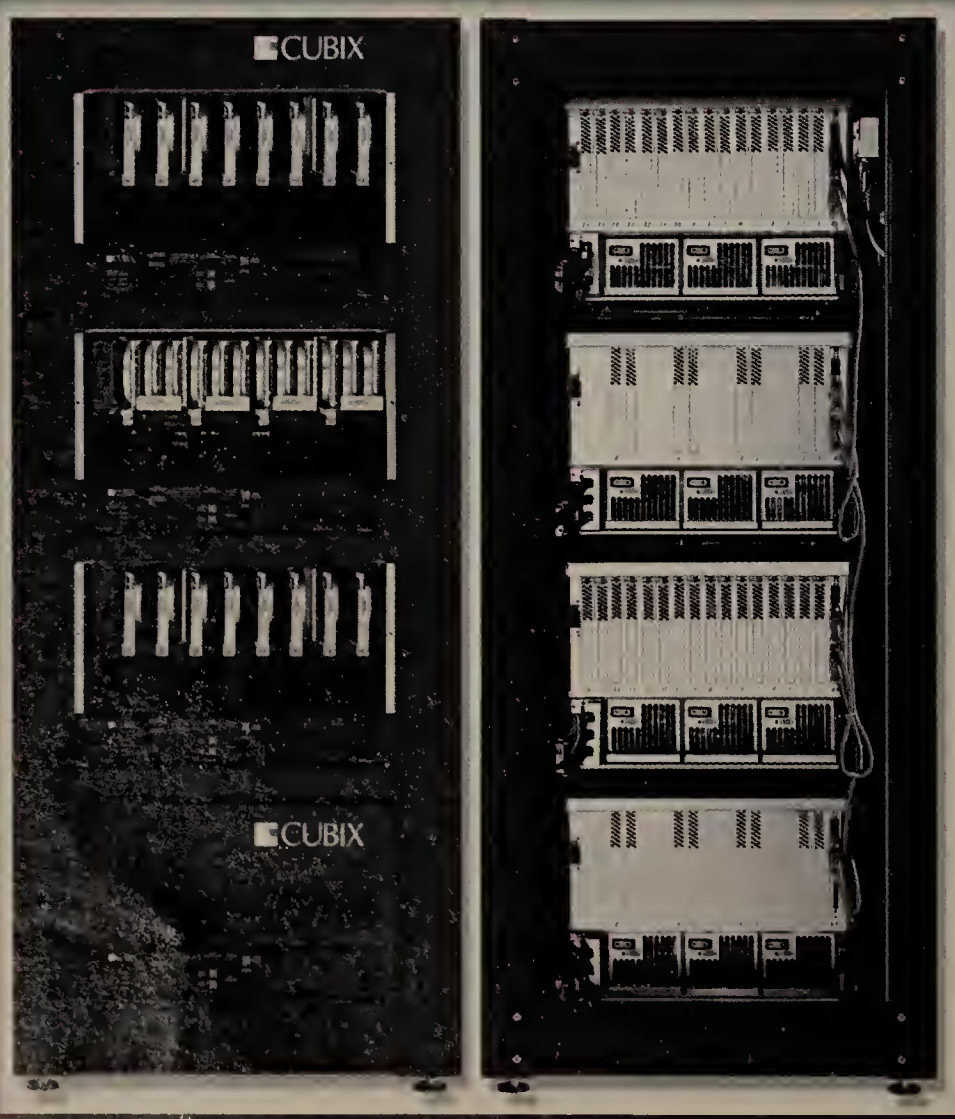

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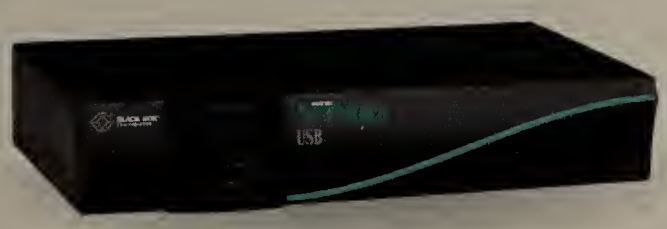

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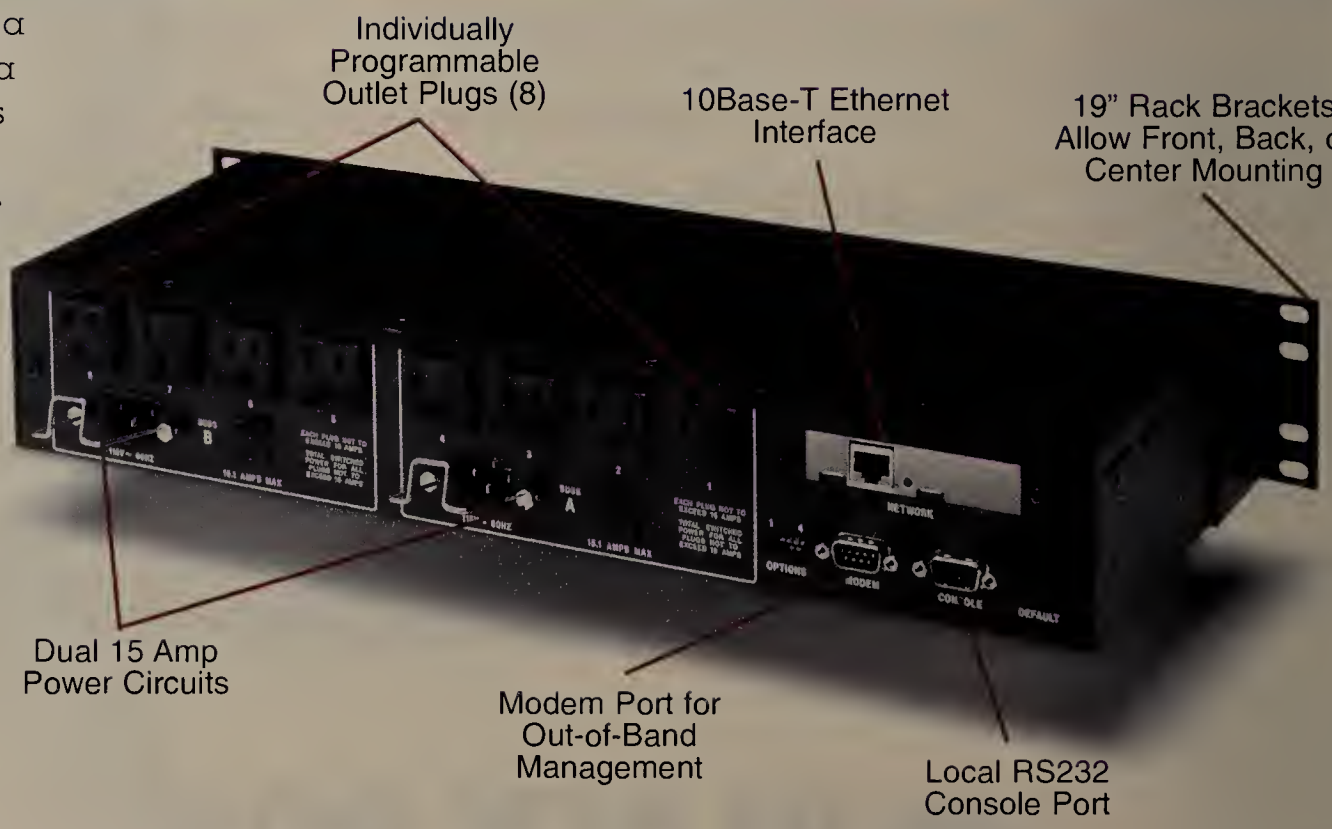

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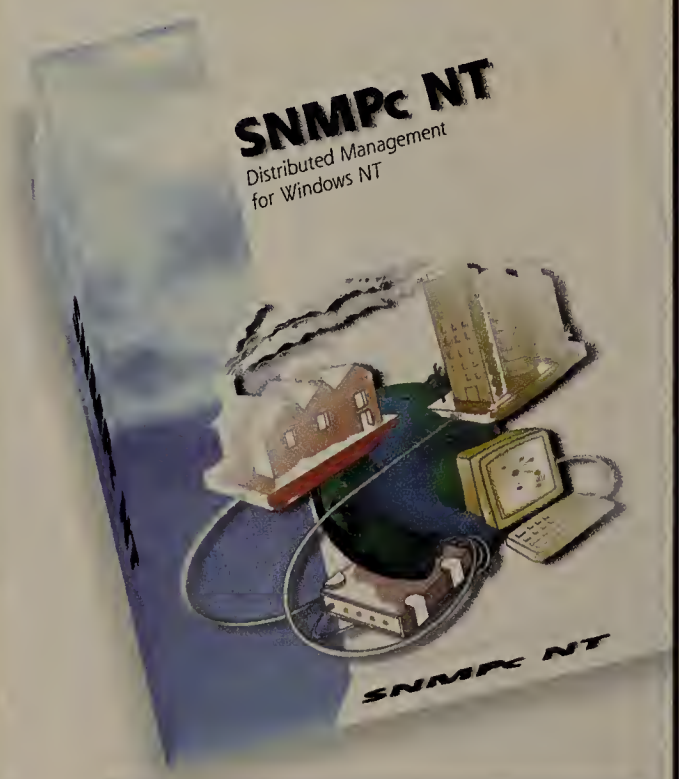

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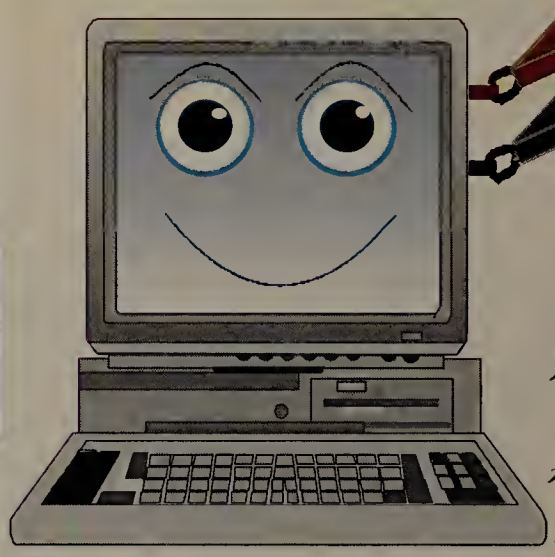

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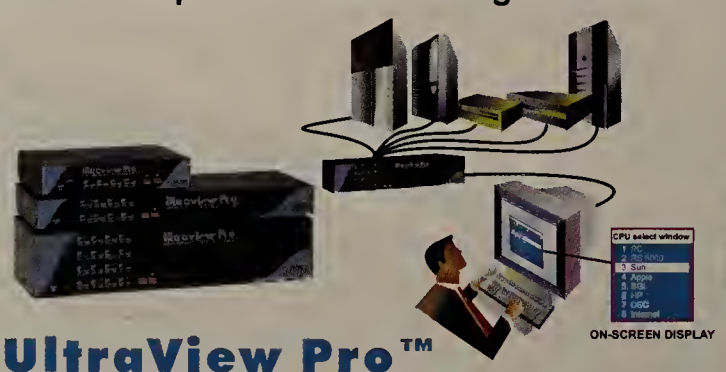

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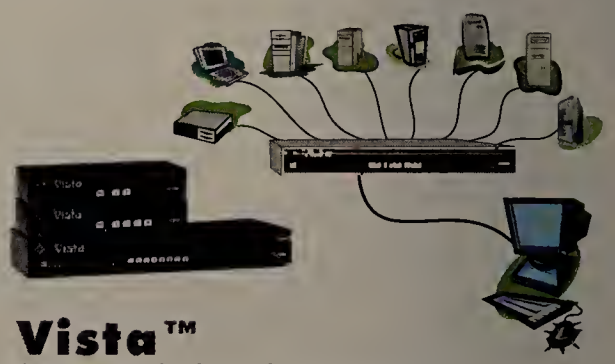

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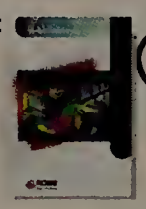

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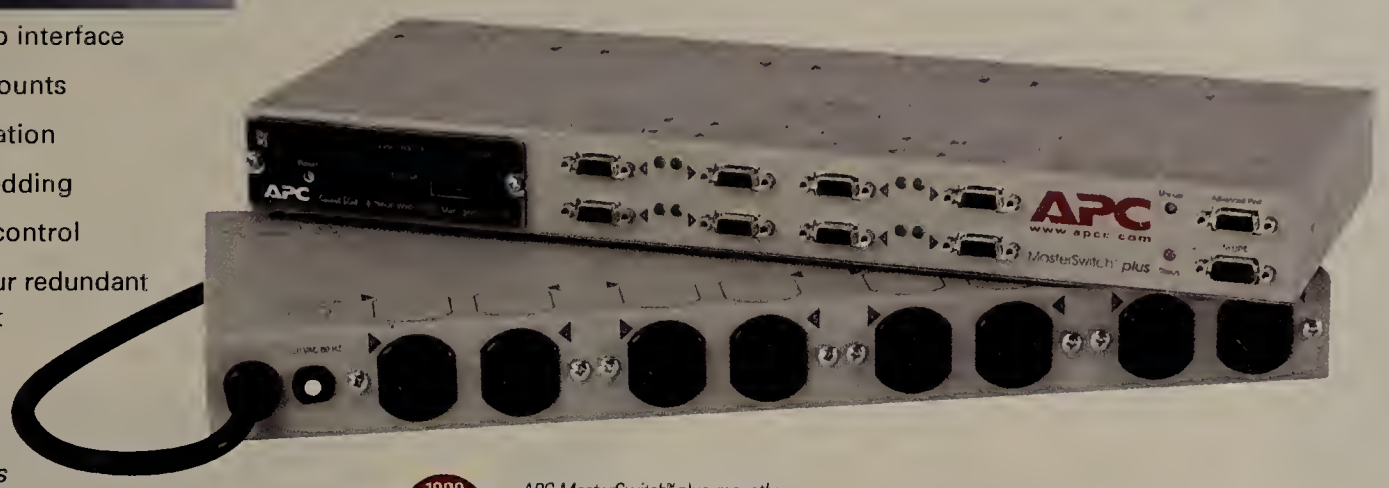

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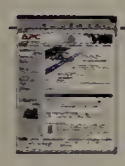

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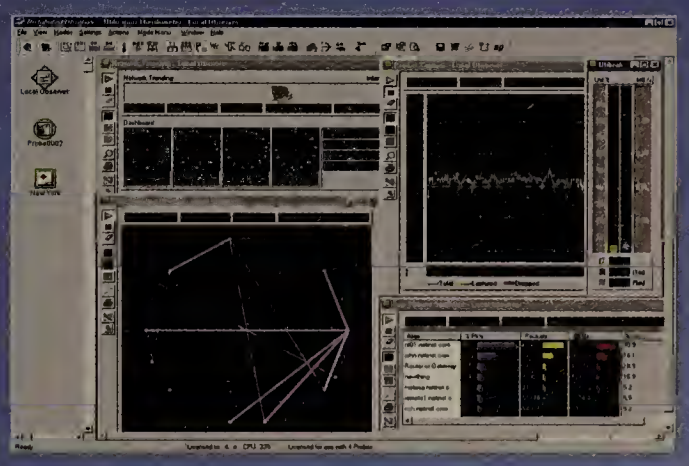

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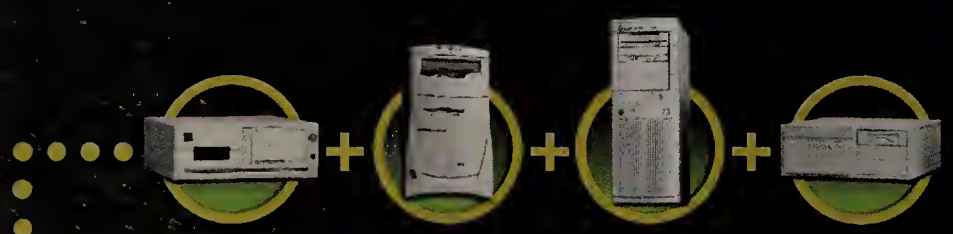

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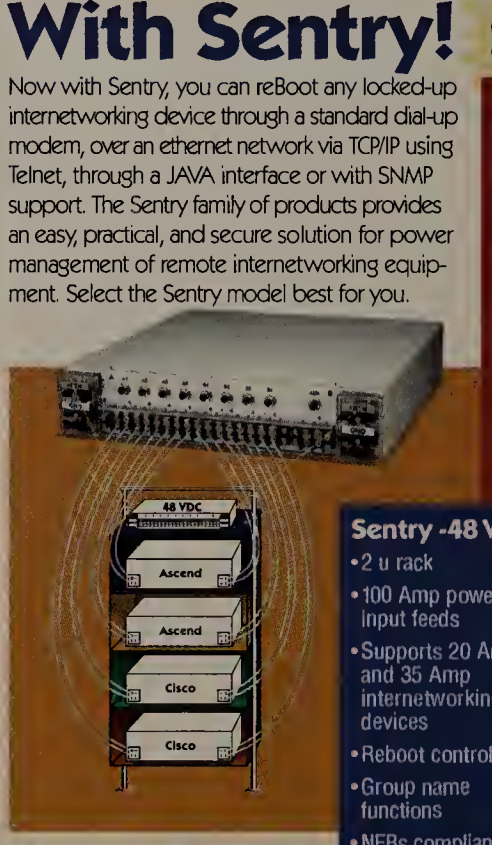

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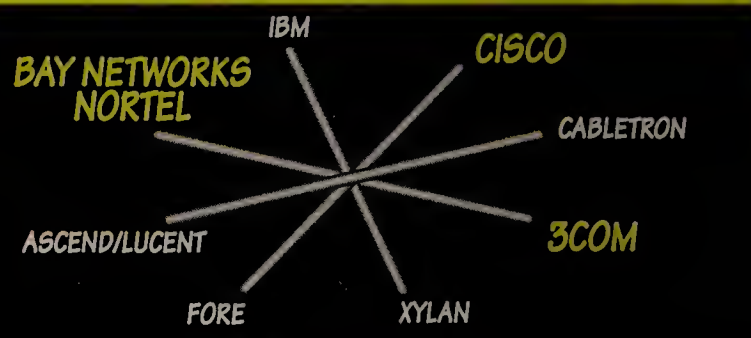

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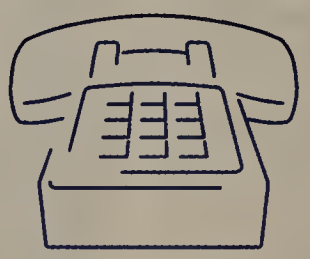

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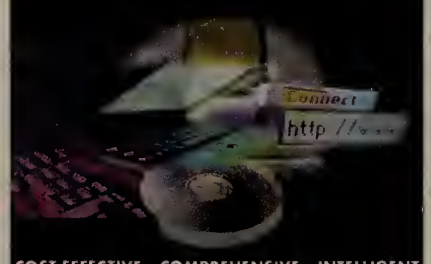

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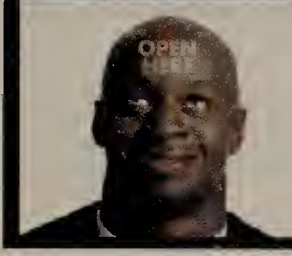

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Senior Consultant sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. In a senior capacity, provide consulting services in the area of energy-related enterprise resource planning software applications. Engage in post-sales implementation of energy-related enterprise resource planning software applications, including installing, implementing, & supporting the software applications. Enhance & modify applications to meet the needs of specific clients. Act as liaison to large corporate clients who are using energy-related software applications, including managing on-going implementation projects for those clients. Provide expertise to development teams regarding energy-related enterprise resource planning software applications. Requires Bachelor's or foreign equivalent in computer science or related field (incl. architectural engineering); 2 years experience implementing, enhancing, & modifying energy-related enterprise resource planning software applications. 8am-5pm, M-F; $84,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado, Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer Job Order #CO4648940

Programmer Analyst

Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Under direct supervision, analyze, plan, develop, test, and document computer programs including network communication programs. . Evaluate user requests and software program requirements for new and modified programs. Write specifications, code, test, and debug computer programs. Customize hardware and software to client needs. Use of Windows NT Server 4.0, Novell, UNIX SCO, MS IIS 3.0, dBase and Paradox. Reqs. Bachelor's or its foreign equivalent in Computer Science, Computer Engineering, Electrical or Electronics Eng., Mechanical Engineering, Physics or Mathematics. Plus 1years in the job offered or 1 years in a related occupation such as Systems Analyst. Technology Manager or Software Engineer. $45,000/ year, 40/hrs/wk, 8AM-5PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4648181.

ELECTRICAL ENGINEER

for computer hardware products company to design logic/analog circuits using CAD. Respond to MS. Barbee Antares Microsystems, 1624 Dell Ave., Campbell, CA 95008.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test, and document computer programs. Evaluate user requests and business requirements for new and modified programs. Write specifications, code test, debug computer programs. Installation of computer systems, networks and customizing hardware and software to client needs. Use of ORACLE, UNIX, PRO*C, Developer 2000, and IBM RS/6000. Reqs. Bachelor's or its foreign equivalent in Computer Sci, Computer Eng, Electrical or Elctronic Eng., or Mathematics. Plus 2 year in the job offered or 2 year in a related occupation such as Computer Engineer, Systems Officer and/or Systems Anylst. Information Systems, Electric or Electronic Eng., or Mathematics. Related experience must include installation, testing and customizing of hardware and software to client needs. $75,000/year, 40/hrs/wk, 8:30AM-5:00PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4648577.

Programmer Analyst

Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. To work in various unanticipated locations throughout the U.S. Under direct supervision, analyze, plan, develop, test, and document computer programs. Evaluate user requests and software program requirements for new and modified programs. Create functional and technical specifications. Develop testing procedures for new product development and maintenance. Customize hardware and software to client needs. Use of FOXPRO, C, Novell Network. Reqs. Bachelor's or its foreign equivalent in Computer Science, Electrical or Electronics Eng., Computer Engineering or Statistics. Plus 1years in the job offered or 1 years in a related occupation such as Systems Analyst. $40,000/year, 40/hrs/wk, 8AM-5PM. . Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4648185.

Programmer/Analyst sought by company in Denver, Co specializing in business software solutions. Design, develop, & localize client/server enterprise resource planning software applications or software tools that are platform independent. Analyze requirements. Create designs & design documentation. Code, test, & debug the software applications. Use proprietary case tools & programming language C in the localization &/or development process. Requires Bachelor's or foreign equivalent in computer science or related field; 2 years experience localizing enterprise resource planning software applications. 8am-5pm, M-F; $59,600/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4648934.

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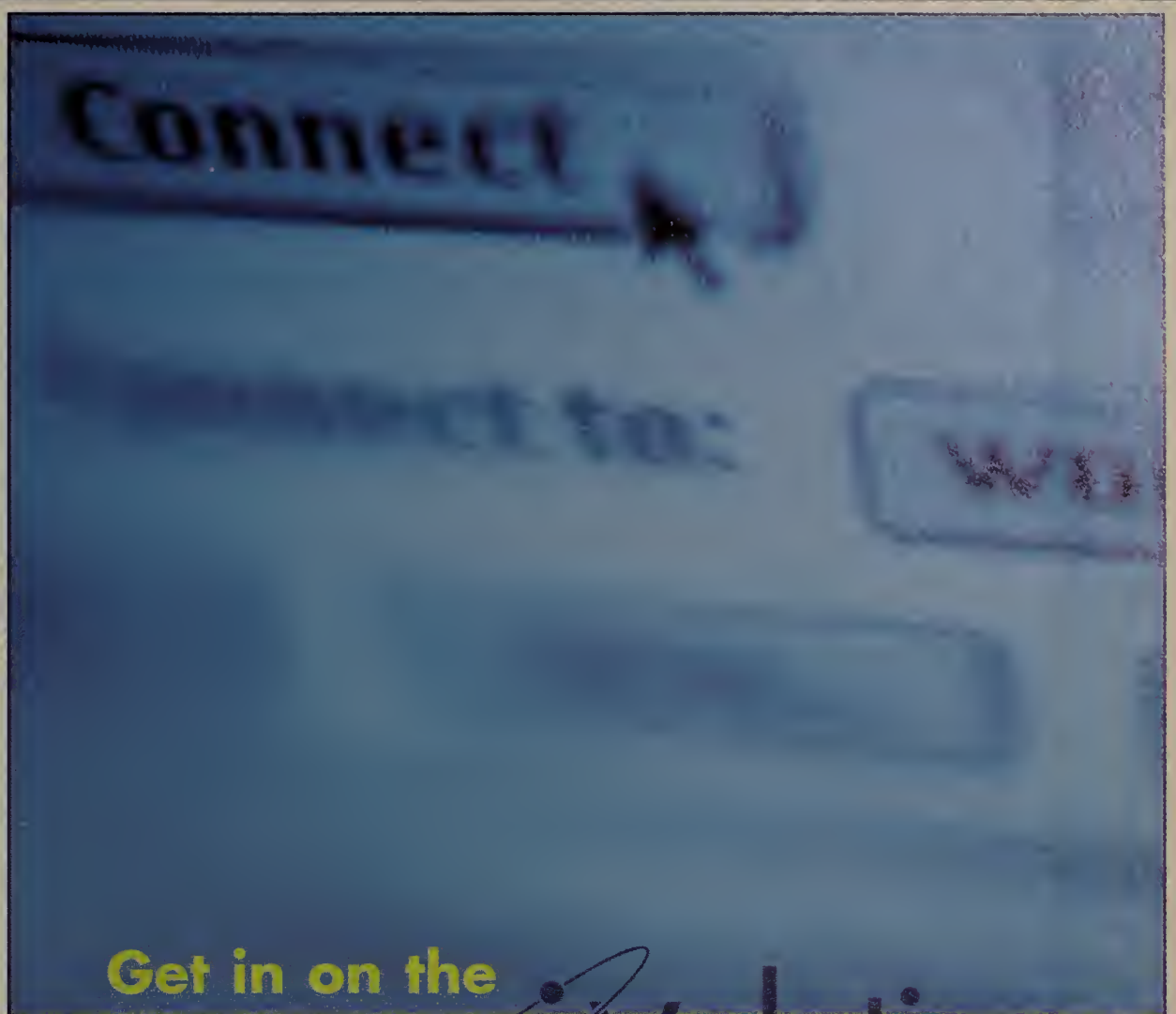

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• Optical Engineer/Scientist with experience in Optical, IP, ATM, SONET, network architecture and design. Ph.D. required.

For all positions, send resumes to: Staffing, Sycamore Networks, 10 Elizabeth Drive, Chelmsford, MA 01824, Fax: (978) 256-6594, or e-mail: resume@sycamorenet.com

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You will be responsible for the development of the Metropolitan Network Infrastructure of the GC North American Network, with accountability for the strategy, program management, technical design/construction and readiness of the field forces to provision and service these new assets. Leading a team of professionals, suppliers and contractors dedicated to this business initiative, you will ensure that operations support systems are meeting deadlines, and fulfilling development plans.

The ideal candidate will have executive experience in a CAP, CLEC, IXC or RBOC. Construction & Engineering Services firm specializing in serving telecommunications carriers will be considered. Your BS and or MS in technical field is preferred.

DIRECTOR - METRO NETWORK PLANNING

You will be responsible for the development of the Master North American Metro Network Plan, setting the strategy, city development plans, partner selections and multi year capital requirements to support the program. As a Director, you will lead a team of professionals to develop individual network plans for each city, including the selection of routes and capacities that will be built, and determine the economics of network engineering and operations.

The ideal candidate will have network planning experience in a CAP, CLEC, RBOC, and/or IXC. A BS or MS in a quantitative field is preferred. MBA desirable.

DIRECTOR - METRO NETWORK ENGINEERING & DESIGN

You will be responsible for the development of the network strategy and architecture for the above-mentioned plan. This architecture will set the fundamental transmission equipment design, including fiber specifications, equipment configuration and specifications. You and your subordinates will be responsible for developing the engineering criteria and selection methodology for each component to be deployed and for developing multi year and annual capital budgets for network equipment.

The ideal candidate will have network planning experience in a CAP, CLEC, RBOC and/or IXC. A BS or MS in a quantitative field is preferred. MBA desirable.

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Information Systems Consultant: Applications support and systems development for finance and accounting systems. Utilize IBM Minframe, MVS/TSO/ISPF, JCL, and Easytrieve and either IBM APL2 (mainframe) and/or Manguistics APL PLUS II or III. Utilize DOS and Windows PC platforms. Master's degree in Computer Science or any Engineering field required. In completing education, must have gained experience in APL programming language. 40 hrs/wk, 8:00 am - 5:00 pm, $61,000/yr. Upon application, must be able to perform job duties and be eligible for permanent employment in the U.S. Resumes to: FDLES Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, Florida 32302-0869. JOFL2028976.

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Requires applicable Bachelor's degree, Master's preferred, along with at least 10 years of manufacturing experience implementing information technology solutions, including 5 years of implementing information systems in support of produce vehicle business processes. Project management experience and extensive experience with CIMPLICITY, PMCS, Production floor systems, VAX, PLC, SCADA, control systems and plant system integration are crucial. Experience in the automotive industry is a must.

Systems Engineer - Production Control Systems

Serves as technical consultant to systems projects and communicates technical direction to staff and project teams. Also develops/follows systems interfacing strategies for custom applications and COTS packages, and guides vendors in designing systems for reusability.

Requires Bachelor's degree in Computer Science, Mathematics or Engineering, supported by a strong understanding of software development tools, including integrated development environments (CASE, 3GL, 4GL, Java) and software development experience in both mainframe and client/server environments. Object-oriented technology and development methodologies are preferred.

Information Technology Manager - Design Release and Web Strategy

Manages design/release Engineers and engineering Web applications portfolio, participates in corporate engineering Web strategy creation, and investigates/evaluates potential business process improvement solutions. Also manages IT development/deployment projects, facilitates request processing, and manages IT support suppliers to ensure contractual obligations are met.

Requires Bachelor's degree in Engineering, Computer Science or other related technical field; Master's degree in Business or Finance preferred. At least 8 years' IT technical experience is also required, along with 5 years' Web technology experience, 2 years' Java experience, 5 years' design/release engineering experience and 2 years' finance experience.

Systems Analyst - Production Control and Logistics

Manages business systems in a matrix environment with resources from multiple organizations and suppliers. Also manages projects and scope changes to meet "deliverable" commitments to customers, evaluates/uses innovative technology when selecting/developing new systems, and creates/coordinates/executes comprehensive business system testing activities.

Requires a Bachelor's degree in Computer Science or Supply Chain Management, mainframe and client/server expertise, Microsoft Access and Project proficiency, project management experience, and knowledge of Production Control, Logistics and Worldwide Purchasing Business practices.

Lead Systems Engineer

Leads the design and implementation of advanced software architecture, develops a rapid prototype application in Java, and performs some supervisory functions.

Requires BS in Computer Science, at least 5 - 7 years' experience in software development for embedded applications, plus experience in object-oriented software architecture design. In-depth understanding of large, complex hardware and software environments is necessary. Communications Protocol Design and Implementation experience preferred.

IT Operations Analyst and Technical Support Lead

Oversees daily operations and management of call center locations and implements infrastructure changes as required.

Requires BA or MIS degree; MCSE certification preferred. At least 3 years' experience in call center operations, a basic understanding of LAN/WAN functionalities, and CTI, Telephony and IVRs experience are also needed.

Systems Engineer

Responsible for developing detailed OnStar specifications covering the entire call center system, including infrastructure hardware, network diagrams, communications flow, CSR workstations, application software, and vehicle communications. Leads the evaluation and selection of alternative call center IT solutions for implementing new OnStar product offerings. Develops and analyzes call workflow and advisor call-handling processes.

Requires BS in Electrical Engineering, Computer Science or equivalent, plus at least 3 years' experience in engineering and application development. Experience in business requirement analysis and specification development, as well as call center applications and infrastructure development are also needed. CTI, Telephony, IVRs and asynchronous serial communications experience is preferred.

Project Manager

Performs IT project planning of cost, schedule and deliverables to meet business needs; along with information systems design, project execution, testing, documentation and training; cost reduction analysis; and budget management.

Requires at least 6 years' experience in IT and project management across diverse applications. Experience in performance metrics and business process engineering a plus. Also requires Bachelor's degree in Business, Math, Computer Science, Engineering or related discipline with an Information Technology focus.

Project Manager - Computer-Aided Design

Leads computer-aided design simulation program management, development and maintenance of budgets, development of infrastructure strategy, and customer interface.

Requires BS in Computer Science or Engineering, and at least 10 years' IT experience, including high-performance computing, computer applications, noise and vibration and crashworthiness. Excellent negotiating and verbal/written communication skills are also required, along with database management experience and networking skills. Must also possess language knowledge of UNIX, NT, NASTRAN, DYNA3D, PAM-CRASH, PAM-STAMP, MADYMO, CAD, CAT and CAE.

Database Manager

Performs system and application development and implementation, manages system and software databases, and interfaces with industry and vendors.

Requires at least 5 - 6 years' IT field experience, plus expertise with project planning and applications architecture development. Excellent negotiation and verbal/written communication skills are also needed, along with language knowledge of COBOL, PL/1, C, C++, SEI/CMM (Level 2+).

Project Manager - Web Development

Supports designers and other members of project teams to develop and maintain a variety of dynamic object database driven Web applications using a combination of software languages and tools.

Requires a Bachelor's degree or equivalent experience; Master's degree preferred. Experience in the development of new and maintenance of existing Web-based applications. Experience in application design with specific experience in Web technologies such as Java, JavaScript, HTML, PERL, CGI, Visual Basic, C++, Object C, or other languages. Skill set should also include electronic commerce security concepts and database development.

Web Infrastructure Manager

Provides electronic commerce lab to evaluate commercial electronic commerce applications; defines electronic commerce lab procedures; conducts assessments of electronic commerce market trends; consults with General Motors users on evaluating and implementing electronic commerce solutions, products and services; supports General Motors electronic commerce strategy development; performs electronic commerce benchmarking.

Requires a BS degree in Computer Science, Mathematics or Engineering. Strong knowledge of electronic commerce strategies, standards, technologies and best practices; well-developed verbal/written communication skills; and a high level of creativity and innovation in problem-solving required. Must possess demonstrated leadership skills, strong teamwork and interpersonal skills, the understanding of benchmarking processes and techniques, and the ability to travel overseas.

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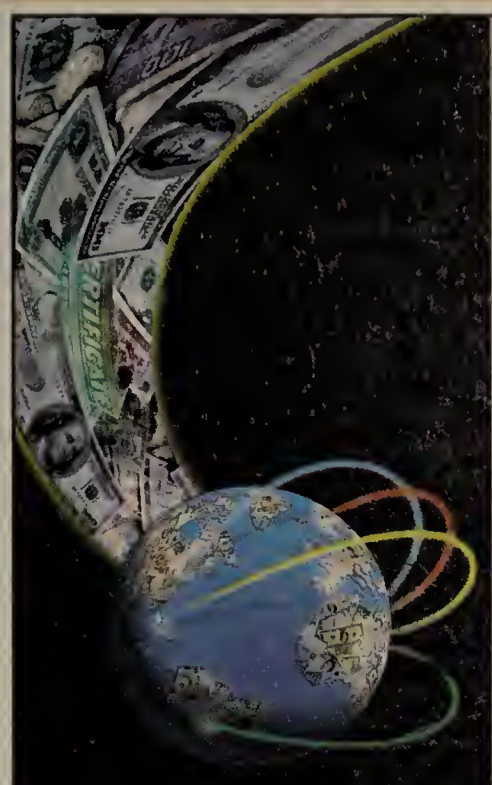

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Microsoft starting to build around Windows 2000

First group of complementary servers head into beta tests, including Exchange 2000 and Host Integration Server.

BY JOHN FONTANA

A week after Bill Gates said Microsoft would introduce a host of servers this year to support the just-released Windows 2000, the company has started to fulfill that pledge.

Last week, Microsoft unveiled the first release candidate of Exchange 2000, a messaging and collaboration server and the first Active Directory-enabled application. A release candidate is software that is deemed worthy of release but sent to select customers for final testing.

Microsoft also announced the first beta version of Exchange Conference Server, which is designed for videoconferencing and data conferencing. In addition, the first beta version of Microsoft's Host Integration Server, the successor to SNA Server, also was released.

The three betas are but a sampling of the servers Microsoft plans to add to the Win 2000 stable. Others that Gates said the company would release this year include the DataCenter version of Win 2000, a 64-bit version of the operating system; SQL 2000; BizTalk Server 2000; AppCenter Server 2000 and Commerce Server 2000.

Exchange 2000, which is expected to ship in the first half of this year, will be a showcase for Active Directory, which is required to run the messaging server. Exchange offers a host of new administrative features, including a new file system called the Web Store, and instant messaging features, but it lacks real-time conferencing features to combat what groupware rival Lotus has built into its Domino platform and Sametime Server.

"Synchronous communication features are the next frontier for groupware," says Jim Kobielus, an analyst with The Burton Group in Midvale, Utah. "Microsoft needed to add stuff like chat, white boarding, and screen sharing to neutralize what Lotus is developing in the data conferencing area."

Conference Server will likely ship midyear.

Microsoft last week also shipped the first beta version of Host Integration Server 2000, which was code-named Babylon. The server supports application and data integration with IBM mainframes and AS/400 systems.

"We are trying to move to host integration for Windows-based applications and away from just terminal emulation services," says Tad Parker, lead product manager for Host Integration Server.

While Host Integration Server pulls mainframe data into the Windows platform, analysts say the real value will come when data can be exchanged bidirectionally.

"When a mainframe-based order-management system can be supported with data from the Windows platform, that's when you'll start to see real integration," say Dan Sholler, an analyst with Meta Group in Stamford, Conn.

Microsoft plans to include bidirectional capabilities in the next release.

Host Integration Server supports the SNA and TCP protocols; provides data access via Open Database Connectivity and OLE DB to IBM's DB2 database; provides replication integration of Microsoft's SQL database, Oracle and DB2; and supports COM+ for CICS/IMS mainframe transactions.

The server is expected to ship this summer. ◪

Server parade from Microsoft

Microsoft plans to release nine servers into the Windows 2000 product family this year. Last week, the company put three of those servers into beta.

Server	Description	Status
Exchange 2000	First Active Directory-enabled application	Release Candidate 1
Exchange Conference Server	Data, videoconferencing	Beta 1
Host Integration Server	Windows, mainframe integration	Beta 1

Microsoft did that in Exchange Conference Server, in addition to adding support for videoconferencing through IP Multicast and the H.323 multimedia conferencing standard. Lotus offers similar video features in its LearningSpace Server.

Forests,
continued from page 16

Additionally, all the components in each forest must be managed separately, users must be trained to run queries on multiple forests, and processes must be devised to update data imported from one forest to another.

Multiple forests have the potential to invade enterprises the same way NT domains spun out of control when department and regional administrators began carving out their own domain fiefdoms.

Political issue

"Active Directory does not solve the domain issue, which is a political issue," says Neil MacDonald, an analyst with Gartner Group in Stamford, Conn. "The way that issue reappears with Active Directory is multiple forests."

Users can set up a new forest simply by clicking a button in a dialog box when setting up a Windows 2000 server.

"If you populate that new forest with users, it's a major problem to back out," says Ed Bradford, architect for NT solutions at IBM. Microsoft needs some grafting tools to essentially join two forests, he says.

> ***"Active Directory does not solve the domain issue, which is a political issue."***
>
> Neil MacDonald, analyst, Gartner Group

Third-party vendors such as FastLane Technologies are offering tools to help migrate users between forests. Microsoft says its metadirectory tools will help manage multiple forests and that grafting tools are forthcoming.

There are certain scenarios that do call for multiple forests, and IT executives should consider their options carefully, according to Microsoft.

One systems engineer for a large multinational oil and gas company who requested anonymity says he will have multiple forests because of slow WAN links in some countries that can't handle replication traffic and because of joint ventures that require separate forests.

"We need to put up some restrictive boundaries, so the cost of multiple forests for us will outweigh the risks," the systems engineer says.

Some organizations, including Microsoft and Compaq, also have separate forests for production and test environments. ◪

Attack code,
continued from page 12

tions, SANS posted a "roadmap" on its Web site last week for defeating the denial-of-service attacks, including information about how to protect against the attacks and how to avoid being made a "host" for assaults on other companies. Compiled by SANS, CERT and The Center for Education & Research in Information Assurance & Security at Purdue University, the roadmap can be viewed at www.sans.org/ddos_roadmap.htm.

Northcutt at CERT's Global Incident Analysis Center says he is optimistic that the use of Windows computers in the denial-of-service attacks can be nipped in the bud — if users are conscientious about updating their antivirus software.

Most antivirus and security vendors have rapidly moved to include ways to detect and eradicate the Trojan-horse denial-of-service attack code through scanning software. CERT and others are urging organizations to beef up their detection and eradication measures to prevent their machines being taken over for denial-of-service attacks.

"If we can get people on two-week cycles of upgrading their antivirus software, that's the way we can kick this," Northcutt says.

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Tivoli,
continued from page 9

example, a company can use the correlation engine to set up and enforce a scheme to block a SYN Flood, a type of distributed denial-of-service attack. Web servers can be instructed to identify and delete incoming IP packets that include erroneous header data that can bog down a system. Risk Manager also includes a Vulnerability Scanner that sends software agents across a network to check Web servers for potential security problems. For instance, the agents can be programmed to recognize Unix-based Trin00 denial-of-service attack code and alert the correlation engine so that appropriate follow-up action can be taken.

Risk Manager can also make sure security applications are distributed consistently through-out the network. Say a network executive wants to distribute a software patch that prevents routers from being used to flood another company's Web server with pings. Risk Manager can create a list of the routers that need the patch, distribute it and then confirm that every router got the patch.

Tivoli's new software works with existing security and management products from Tivoli and parent company IBM. It also works with software from partner vendors such as Internet Security Systems.

Integrated security products such as Risk Manager are becoming more common, says Chris King, an analyst at Meta Group, a consultancy in Stamford, Conn. Tivoli could have an edge in this market because of its experience with enterprisewide network and systems management, but the company will need to make sure customers can make Risk Manager work with tools from leading management software vendors such as Computer Associates and BMC Software.

Risk Manager is currently in beta testing. The product will be released in the next few weeks, followed by a more automated edition later this year. IBM also plans to roll out versions of the software for AIX, Solaris and Windows 2000 down the road. Pricing information was not available. ◪

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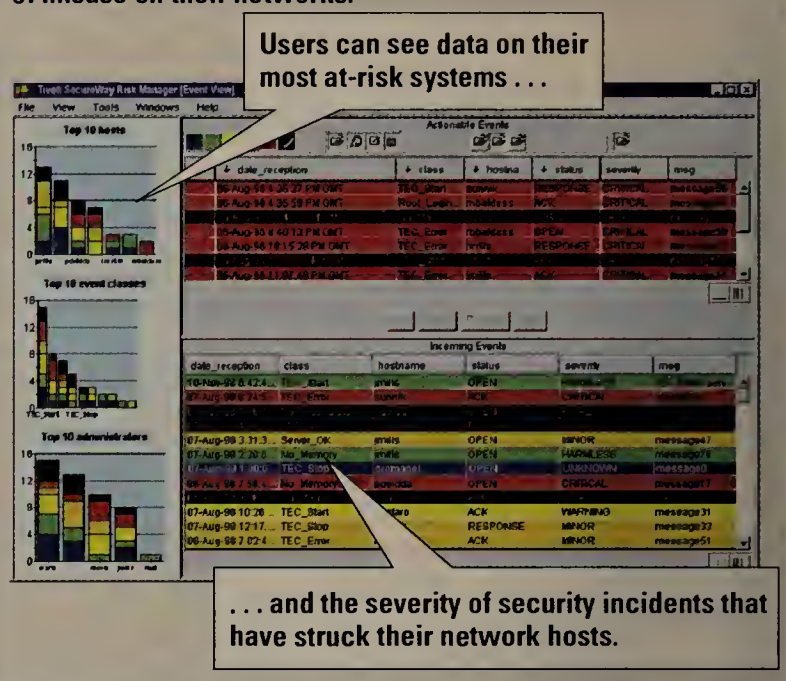
IS goes into risk management

Tivoli's SecureWay Risk Manager software lets administrators see what systems are vulnerable to misuse and view histories of misuse on their networks.



Ford,
continued from page 10

for the Internet," Kelley hinted last week. That could mean new cars might be sold more inexpensively on the Web than off.

Analysts say Ford's effort may improve its brand consistency on the Web. Some local Ford dealers' Web sites are so amateurish "they look like their high school sons and daughters must have done them," says Gartner Group Research Director Rob DeSisto.

> ***"We want to make sure our dealers have the tools to get leads and make sales on the Internet."***
>
> Brian Kelley, president, Ford's ConsumerConnect e-commerce division

But the danger is, local individuality could give way to a monolithic look.

DeSisto also warns that Trilogy's strength is in a tool that lets online shoppers put together a desired car model. But he says the company is hardly in a position to provide the wide range of Web services to dealers envisioned by Ford.

"Trilogy's technology footprint will fall far short of what's needed here," DeSisto asserts, pointing out that dealers will need e-mail, customer response management software, mail-campaign software and much more.

Lessons from Nissan

Global car manufacturer Nissan last year struggled with the daunting task of a Web makeover for purposes of giving potential car buyers a more unified view of car dealerships. Nissan dealers traditionally did their own thing on the Web, but Nissan management decided this was too fragmented an approach in terms of quality and branding.

Nissan is divided into three regional centers — Europe, Japan and North America. For Nissan, the biggest headache in the search for a global Nissan Web brand has been that the nissan.com and nissan.net domain names are held by Nissan Computer, which is now entwined in a trademark dispute with the car maker in a California court.

"This has been a huge drag," says Gary Larsen, manager of brand communications in Europe for the car maker, which had to use nissancurope.com for his region.

With so many country, language, tax and price differences in Europe, another problem has been maintaining a distinct local flavor on Nissan Web sites while making it easier to find car information. Systems integrator Razorfish has created a Web-based map of Europe for Nissan that lets viewers click on France, for instance, to be linked to nissanfrance.com.

Nissan's new European Web look has meant that local dealers had to agree to turn over control of their Web site content and management to Nissan Europe.

"They felt this was pragmatic, and they agreed to do it," Larsen says. "We now have these microsites in numerous languages so every national Nissan site can link into these."

Dealers now exchange Web files with Nissan's central command for Europe in Amsterdam. While buyers can now configure the Nissan car they want online and get a quote for it, they cannot buy cars via the Web. But Nissan hints that online car sales are on a road it may take in the future. ◪

Novell,
continued from page 9

of the consultancy Bright Ideas in Edison, N.J. "If I don't want to add [Secure Sockets Layer] encryption on my server, I can just turn on the appliance. Basically, I can plop this device in any environment and have it start issuing certificates and decrypting secure pages."

SecureMe contains a CPU, memory and software. It is expected to be sold through hardware vendors such as Compaq and Dell, Novell says. Today, Novell markets its Internet Caching System, a Web-server caching technology, through system vendors. These companies may combine SecureMe and Internet Caching System into a single device that caches as well as encrypts and decrypts secure messages, or offer SecureMe as a standalone single-function device.

"Being able to offload crypto services will greatly enhance our ability to

BrainShare2000 PREVIEW

increase the end-user performance of our virtual private network and extranet," says Peter Strifas, a network specialist with the Connectivity Group in Chicago.

The messaging software firm is developing a Web 'hub' — a digital community where partners, developers, end users and sales personnel will log on and access information, news and services. "SecureMe, with its SSL encryption/decryption, PKI and directory enablement becomes a perfect fit," Strifas says.

SecureMe is operating system independent and requires no changes to the Web server or client browser software. It turns HTTP content into Secure HTTP content for communications over the Internet and redirects end-user HTTP requests for secure content to its SSL port. The device responds with a Java applet or HTML page requesting SSL authentication.

Novell declined to comment on SecureMe pricing. The appliance will ship by year-end.

Separately, the "hosted file system" set for BrainShare unveiling is a project Novell has been developing as a result of its recent acquisitions of JustOn and PGSoft, Novell says.

JustOn's service lets users store files on the Internet and share them with other users. PGSoft is developing client-side software that lets users access these files from Microsoft's Windows Explorer or a browser. It is part of Novell's In-the-Net Services division, which is expected to make other hosted services announcements at BrainShare. ◪

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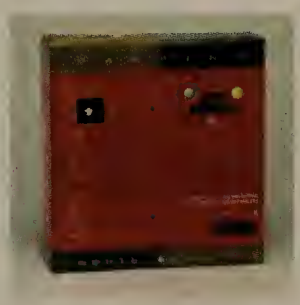

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iPlanet,
continued from page 9

Netscape Application Server. They're waiting for what's now called iPlanet Application Server 6.0, due in March. This version will include the latest Java APIs — packaged in Java 2 Enterprise Edition (J2EE) — which are a critical requirement for most big e-commerce sites. J2EE is already being deployed in application servers from the likes of BEA Systems and IBM.

"Version 6.0 is a strong product," says Anne Thomas, an analyst with Patricia Seybold Group, a Boston research company. "Customers are asking for J2EE. [Version 6.0] is a high-end application server offering with better than average performance and scalability."

IPlanet President and General Manager Mark Tolliver admits his company stumbled out of the gate, failing to describe a clear path for a bundle of competing products. Sun and Netscape, for example, each had their own application server and at first talked vaguely of blending the two.

"We did struggle with that for three or four months," Tolliver says. "That's what convinced us we had to be crystal clear, or people just wouldn't take us seriously."

The final choice: the Netscape Application Server, renamed iPlanet Application Server, instead of Sun's Netdynamics.

But the product decisions left some customers, such as Johnson & Johnson senior consultant Bob Rudis, smarting. Products he relied on were cancelled or sold off, while new releases of others were buggy, he claims.

"I am a victim of the alliance," Rudis says. He ran into problems with the 4.0 release last fall of the iPlanet Web server, based on Netscape code. "It did not install properly," he says. "It did not interoperate with its own directory server. And we do not see major industry support for it going forward.

"Due to how poorly the Netscape integration has been, and also due to how sparse communication has been from Sun and iPlanet, we are considering all alternatives," he says.

Brian Clark, vice president of information technology for BrannWorldwide, a direct marketing company in Deerfield, Ill., says he was unable even to get price quotes from a Netscape reseller. "They had problems getting in contact with anyone at iPlanet who could give them good information," he says.

Tolliver insists the confusion is a thing of the past. "The No. 1 accomplishment has been answering the question: 'Can you stand up and present a crystal clear product roadmap to your customers?' Everything else flows from that."

The stakes are huge, with billions of dollars being spent on the type of e-commerce software that iPlanet sells. The company offers server products, such as directory and application servers, that form the skeleton of e-commerce sites. And those skeletons are fleshed out with applications for billing, procurement and trading partner exchanges — applications that are available from iPlanet.

IPlanet has formidable resources, including 2,400 employees, drawn equally from Sun and Netscape. The company claims to have 300 of the Fortune 500 companies as customers, and has gained momentum of late with some big wins.

Washington Mutual in Seattle, for instance, is shelling out $8 million for iPlanet software and services, to be used for both a corporate intranet and as the basis of future e-commerce plans. Firmbuy, a venture-funded start-up in Chicago, just launched an online business procurement service based on iPlanet software.

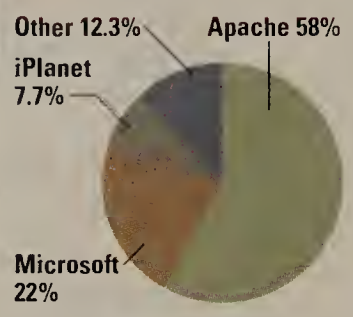
Observers say iPlanet, given its wide range of products, has a chance to become one of a handful of really big e-commerce systems suppliers, particularly if its new application server catches on. But they add that the company will need to strengthen both its marketing and technologies.

When it comes to e-commerce, customers are likely to be very unforgiving if the technologies don't work as promised. ◩

Room for improvement

IPlanet has some catching up to do in both the Web server market . . .

Web server installed base by developer (based on a Feb. '00 survey of 11.1 million Web servers)



. . . and application server market.

Application server market rankings (1998):

1. Oracle
2. Forté (acquired by Sun)
3. Apple
4. Allaire
5. Information Builders
6. Netscape (now iPlanet)

SOURCES: NETCRAFT.COM, IDC, FRAMINGHAM, MASS.

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The Scoop

The news behind the news

TELECOM PUTS E-COMM PLATFORMS TO TEST

E-commerce ventures such as Netscape and Sun's iPlanet E-Commerce Solutions aren't just targeting big telecom carriers because they think the service providers might be interested in heavy-duty transaction platforms such as iPlanet's ECXpert. The e-commerce companies know that for the regional Bell operating companies it's practically a regulatory requirement that they use such products — or create their own.

Last December, Bell Atlantic became the first RBOC to gain long-distance approval from the Federal Communications Commission. To do so, the carrier had to show the FCC that it could handle heavy volumes of orders from local competitors to switch customers they had won in New York — and do so in an all-electronic environment.

AT&T and MCI WorldCom insisted on this requirement, pointing out that once they starting running ads on TV luring residential customers away from Bell Atlantic, the volumes of orders would be too heavy to handle manually.

Now that those TV ads are running in New York and tens of thousands of competitors' orders are flowing into Bell Atlantic every week, the system seems to be breaking down. And that raises into question whether a telecom regulation can really anticipate the problems of scalability in hardware and software systems.

But Bell Atlantic last week said it's having to handle a lot of competitive local exchange carrier (CLEC) orders in New York manually, and last Thursday it was due to meet with the CLECs and review with them the possibility of replacing ECXpert with its own homegrown e-commerce transaction platform. Bell Atlantic Regulatory Vice President William Allan admits that the potential replacement platform is still being tested internally. And that has left the CLECs feeling like they're starting from square one. After all, the FCC only gave Bell Atlantic the long-distance authority after an independent test of ECXpert and other back-office systems by consulting firm KPMG last year.

Even during that test, AT&T and others complained that a few of their orders were getting lost. Now that orders have risen dramatically, the problem is magnified. "Either on the way to ECXpert or on the way out — we don't know which — the orders get lost," says Harry Davidow, AT&T's chief regulatory official for New York. "They're losing 30% to 40% of them, and when the orders are lost, they're completely gone, and they don't know that they've lost anything."

Fortunately for enterprise network managers, the current problems in New York mostly affect residential and small-business customers — orders for enterprise-class CLEC data circuits go through a different procedure. But the bigger concern is how long it will be before RBOCs can offer long-distance in other states. Allan last week told *Network World* that Bell Atlantic has shut down testing of its local-competition systems in the three states where it hoped to next file long-distance applications — Massachusetts, New Jersey and Pennsylvania — in order to divert people working there to New York. And AT&T is certain to claim to the FCC that it is no coincidence that the first RBOC to win long-distance authority is already "backsliding" on its local-competition performance.

That's no help to SBC Communications, which is awaiting an FCC ruling on its pending application for long-distance authority in Texas. Until vendors and carriers can prove that they can trade CLEC residential orders without a hitch, the competitive telecom landscape may not change as fast as users would like.

— David Rohde

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Backspin

Scanning an Internet-style deal

What a deal! I was recently in Staples with my dear wife buying boxes (we're moving again) when I saw an unbelievable deal — a Canon scanner for $30! That's right, three zero. It works like this: You buy the scanner for $130, and you'll get a $40 rebate from Canon and a $60 rebate from Staples. Amazing.

The scanner is a CanoScan FB 620U personal model with a Universal Serial Bus (USB) interface. It does 600 by 600 dots per inch, 36-bit color scanning, comes with Adobe PhotoDeluxe Home Edition and TextBridge Plus, and takes perhaps 10 minutes to install. The results are excellent, and for $30, it's an amazing value.

A friend pointed out that for $30 you could buy them and resell them at garage sales for double the price, which got me thinking. . . . So, here's a strategy based on Internet marketing tactics: We'll give the damn things away.

MARK GIBBS

How will this work? We'll buy, say, 250,000 scanners, which will cost us $32.5 million. We'll apply for the rebates, which they claim take six to eight weeks to process, and get back $25 million.

Assuming we don't have $32.5 million lying around, that means we'll be borrowing the funds. Let's say the loan is at 10% per month starting on March 1. If we arrange with the lender for the first payment to be due May 1, the interest due at this point amounts to $136,545.14. We can pay off part of the loan with the $25 million rebate and we will still have $7,907,378.47 to pay off.

But over those two months, will we be idle? Oh no, not us. We'll do some deals!

We'll sell the cover of the scanners for advertising. We can divide the space into four parts and sell each quadrant at, say, $5,000,000 each. Assuming we can get the $20 million revenue in by the end of the second month, we can pay off the loan in full, leaving us with $12,092,621.53.

Now we have to print the ads on the machines — say $10 per unit to unpack, print and repack — so we're left with $9,592,621 and some change. We'll need to advertise (say, $1,000,000) and we'll have some operational costs (warehousing, staff, etc., say, $500,000) so we're left with just over $8,000,000. We have to ship out the hardware, but let's assume that we'll charge a shipping and handling fee that covers the costs (probably around $10).

Cool. Now we'll build advertising and sponsorship directly into the software (we'll cache ads, so even if there's no Internet connectivity we can show ads anyway). We should be able to get a cost per thousand (CPM) of around $40 (CPM is an advertising term for the cost of presenting an ad to a thousand people — the M in CPM stands for "mille" which is "thousand" in French).

If each user scans on average, say, one image per week and we show just one ad per scan, then we'll be in line for payments of around $50,000 per month. We'll prove our advertising figures by having the software automatically tell us when it is run, if the user has an Internet connection (we'll have to do some fancy footwork in the case of dial-up users, but that's not heavy lifting) and then we'll extrapolate for the entire user population to estimate the use by non-Internet users.

By the end of the first year, we'll have made a further $600,000 on advertising and, if we sell software upgrades and new applications, we can probably turn that into something like $1,000,000. That will give us a profit of just over $9,000,000 in the first year even if the scanners are the only product we can find at a knockdown price, which seems unlikely.

Have we got a business or what? So, you write the business plan, I'll line up the venture capitalists (we need their money to borrow the money) and we'll plan for an IPO in six months. What a deal!

Do a deal with nwcolumn@gibbs.com.

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

"Cell phones will rule your life . . . sooner than you think" an e-mail newsletter promised (threatened?) me last week. The pundit who authored the piece went on to explain why handheld phones "will become the gateway to the rest of the digital world," a major if not primary access point for all manner of interaction with the Internet. An analogy was even drawn between Internet-enabled cell phones and nothing less than the most important technological advance since Gutenberg's printing press: the TV remote control.

This was no isolated hosanna, either, as trade and business journals have been brimming with these stop-the-presses predictions for many months now. Sooner than you think, the PC is going the way of the record player, and laptops will become doorstops. Sooner than you think, we'll all be e-mailing, stock trading and impulse buying over the Internet via our cell phones. **"M-commerce"** it's being called — as in "M" for mobile.

Hold the phone, Jack: Isn't this hype just a wee bit ahead of reality?

The technological obstacles to "M-commerce" remain daunting, to be kind: Lilliputian screen sizes, painful phone-pad keyboarding, immature standards efforts, paltry bandwidth, lax security, and let's not forget, significant cost issues.

And, amid all the hype about "anytime, anywhere" access to the Internet, this question remains wholly unanswered: Do the increasingly wired masses need anytime, anywhere Internet access, especially when that experience promises to be painful for the foreseeable future?

None of which is to say that cell phone providers aren't going to wage a holy war over who can provide the snazziest Internet features, or that there won't be gadget junkies pining for those wares. The question boils down to this, though: Will "M-commerce" be revolutionary or evolutionary? . . . My money's on Darwin.

Stephen Douty, CEO of a start-up called **Octopus. com,** recently told Buzz that he has the e-mail address steve@hotmail.com because he was fortunate enough to have been one of **Hotmail's** first employees. Don't ask why this came up, but it did remind me that a sure-fire way to recognize a rich person in the Internet world is if they send e-mail from a firstname@successful company.com address.

I once ran that theory by the marketing director at a high-flying network company that had recently gone public. One of his colleagues is a firstname@successfulcompany.com type.

"Man, this guy is soooo rich, it's silly," was the marketing director's take. "You couldn't be MORE right."

Buzz is too polite to have asked Douty if he hit the lottery when Microsoft bought Hotmail. But, he did say that his seemingly exclusive e-mail address has become "all but useless," considering steve@hotmail.com is nothing but a spam magnet these days.

As for Douty's start-up: Those who like tinkering with personal customizable Web views (Octopus is targeting "power users" to help evangelize its new service) should get a kick out of the tricks they can perform with the simple drag-and-drop elements that Octopus offers. The payoff is single-click access to a wealth of news, personal-finance information and business reports that is all hyperlinked to the hilt.

Backed by **Redpoint Ventures,** Octopus hopes to make money by charging content providers for the traffic produced by its service.

From an e-mail received here last week: "Dear Paul McNamara: Any editorial comment or mention that you may give this press release would be greatly appreciated."

Always eager to please, here is my editorial comment regarding **MyWebDentist.com,** the subject of the release:

You're pulling my mouse, right? MyWebDentist.com — purveyors of "second opinions" on dental woes — may be the dumbest idea since Moe tied Curley's aching tooth to that doorknob. . . . They asked.

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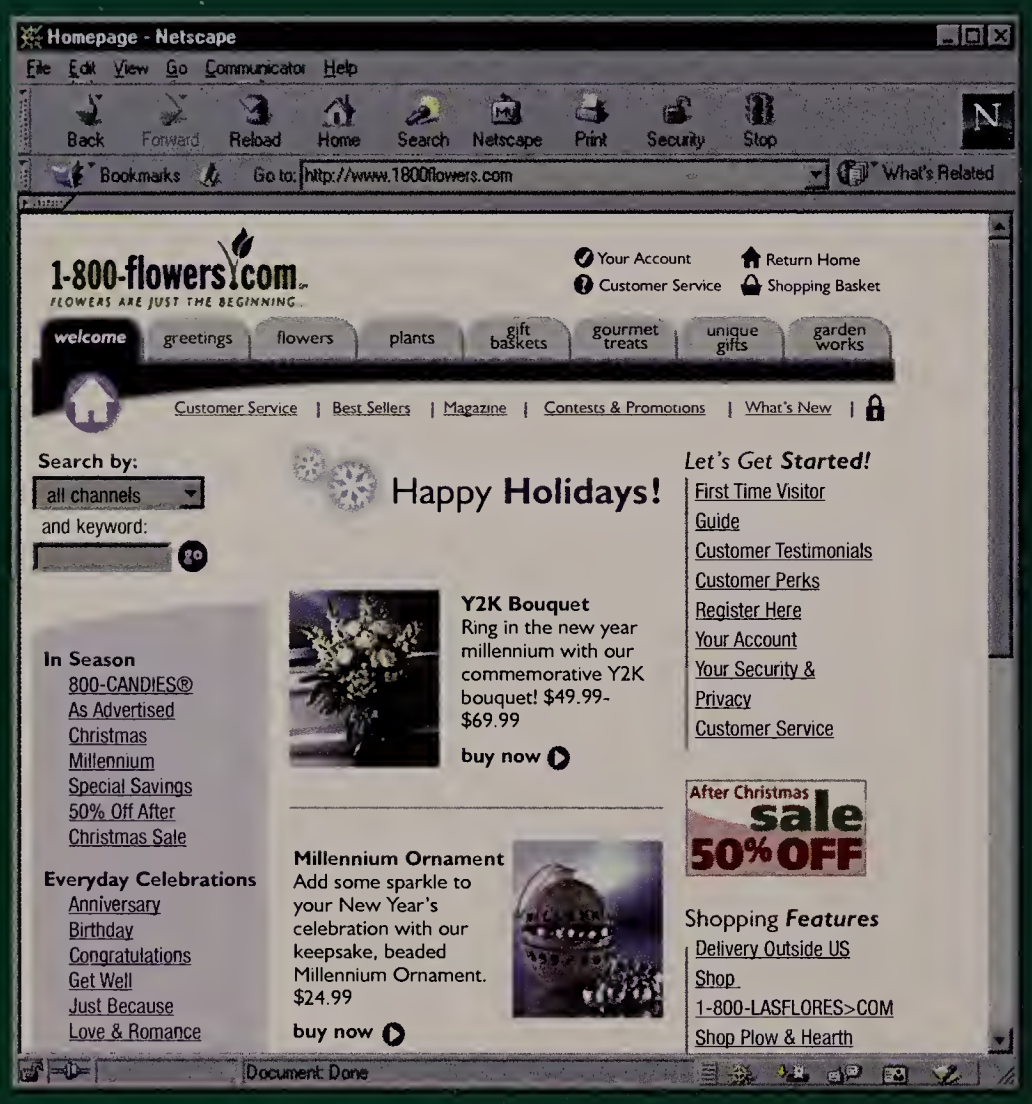

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1 What is the principal business activity at your location? (check ONE only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
10. ☐ Education
11. ☐ Government
12. ☐ Military
13. ☐ Aerospace
14. ☐ Consulting (Independent)*
15. ☐ Carriers/Service Providers
16. ☐ Internet Service Provider (ISP)
17. ☐ Manufacturing (Computer/Communications/OEM)
18. ☐ Resellers of Computer/Network Products (VARs, VADs)*
19. ☐ Systems/Network Integrators*
20. ☐ Distributors (Computer/Communications)*
21. ☐ Other (please specify)_____

*ATTN: CONSULTANTS, INTEGRATORS, DISTRIBUTORS, RESELLERS. PLEASE COMPLETE ENTIRE FORM BASED ON ALL CLIENTS AND YOUR OWN BUSINESS NEEDS.

2 P. What is your primary job function? (check ONE only) S. What is your secondary job function? (check ALL that apply)

P	S	
☐	☐	1. Network Management
☐	☐	2. LAN Management
☐	☐	3. Datacom/Telecom Management
☐	☐	4. IS/IT/MIS/CIO/CTO/Systems Management
☐	☐	5. Internet/Intranet/E-Commerce Mgmt, Webmaster
☐	☐	6. Engineering Management
☐	☐	7. Corporate Management (CEO,COO, CFO, Pres., VP, Dir., Mgr.)
☐	☐	8. Consultant (Independent)
☐	☐	9. Other (please specify)_____

3 What is the estimated value of Network equipment and services that you specify, recommend, or approve the purchase of?

(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-N.)

1. $100 million or more
2. $50 million to $99.9 million
3. $25 million to $49.9 million
4. $10 million to $24.9 million
5. $1 million to $9.9 million
6. $100,00 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ___ Large Systems (Mainframes/Minis)
B ___ Desktops (Micros/Laptops/Workstations/PDAs)
C ___ Servers
D ___ LANs
E ___ WAN Equipment
F ___ Carrier Services
G ___ Internetworking
H ___ Internet
I ___ Intranet
J ___ Extranet/E-Commerce
K ___ Remote Access
L ___ Peripherals (including storage)
M ___ Software
N ___ Services/Support

4 What is the total number of sites for which you have purchase influence? (check ONE only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (check ONE box in each column)

SERVERS		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A	B	C	D	E	F
1. 50,000+		1. 50,000+		1. 50,000+	
2. 10,000 to 49,999		2. 10,000 to 49,999		2. 10,000 to 49,999	
3. 1,000 to 9,999		3. 1,000 to 9,999		3. 1,000 to 9,999	
4. 100 to 999		4. 100 to 999		4. 100 to 999	
5. 50 to 99		5. 50 to 99		5. 50 to 99	
6. 10 to 49		6. 10 to 49		6. 10 to 49	
7. 1 to 9		7. 1 to 9		7. 1 to 9	
8. None		8. None		8. None	

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. SCOPE (check ONE only)
Corporate
1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. INVOLVEMENT (check ALL that apply)
1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check ONE only)

A. AT YOUR LOCATION
1. ☐ Over 20,000
2. ☐ 10,000 -19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 250 - 499
8. ☐ 100 - 249
9. ☐ 99 or less

B. ENTIRE ORGANIZATION
1. ☐ Over 20,000
2. ☐ 10,000 -19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

8 Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. CURRENTLY INVOLVED IN PURCHASING **B. PLAN TO PURCHASE**

INTERNET/INTRANET

A	B	
☐	☐	01. VPN Equipment
☐	☐	02. VPN Services
☐	☐	03. Firewalls/Security/Encryption
☐	☐	04. Electronic Commerce
☐	☐	05. Web Servers/Software
☐	☐	06. Web Enabled Call Center Tools
☐	☐	07. Voice/Video over IP (IP Multicast Routing)
☐	☐	08. Internet Services
☐	☐	09. Web Hosting
☐	☐	10. Host Access
☐	☐	11. Web Development Tools
☐	☐	12. Management/Monitoring Software
☐	☐	13. Web Based Management Tools
☐	☐	14. Web Based Collaboration/Groupware
☐	☐	15. Caching/Load Balancing Products
☐	☐	16. Other Internet/Intranet

LANs/INTERNETWORKING

A	B	
☐	☐	17. Local-Area Networks
☐	☐	18. Network Operating System Software (NOS)
☐	☐	19. Intel Based Servers
☐	☐	20. Intel Based Multiprocessor Servers
☐	☐	21. RISC-Based Servers
☐	☐	22. Clustered Servers
☐	☐	23. Print Servers
☐	☐	24. Routers
☐	☐	25. Layer 2 Switches
☐	☐	26. Layer 3 Switches
☐	☐	27. Layer 4 Switches
☐	☐	28. ATM Switches
☐	☐	29. Token-Ring Switches
☐	☐	30. Network Storage (NAS, SANs)
☐	☐	31. Storage/Backup (Optical, Disk, Tape, RAID)
☐	☐	32. Network Test/Diagnostic Tools
☐	☐	33. UPS
☐	☐	34. Network Interface Cards (NICs, PCMCIA)
☐	☐	35. Hubs/Intelligent Hubs/Stackable Hubs
☐	☐	36. Cables, Connectors, Baluns
☐	☐	37. SNMP Platform
☐	☐	38. Management Frameworks
☐	☐	39. Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A	B	
☐	☐	40. Modems
☐	☐	41. Cable Modems
☐	☐	42. Asynchronous Transfer Mode (ATM)
☐	☐	43. Frame Relay Equipment including FRADS
☐	☐	44. Frame Relay Services
☐	☐	45. Remote Access Products
☐	☐	46. Remote Access Services
☐	☐	47. Wireless Data Equipment/Services
☐	☐	48. ISDN Equipment/Services
☐	☐	49. FT-1/T-1/T-3 Services
☐	☐	50. xDSL Services/Products
☐	☐	51. Diagnostic/Test Equipment
☐	☐	52. DSU/CSU
☐	☐	53. PBXs
☐	☐	54. Videoconferencing
☐	☐	55. Managed LAN/Router Services
☐	☐	56. Fax Servers/Services
	☐	57. Other WAN Equipment/Services

None of the above (1 - 57) ☐ A 58. ☐ B

9 Please indicate the network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. CURRENTLY INSTALLED **B. PLANNED FOR PURCHASE**

COMPUTERS/PERIPHERALS

A	B	
☐	☐	01. Laptops/Notebooks/PDAs
☐	☐	02. PCs
☐	☐	03. Windows Terminals/Thin Clients
☐	☐	04. Workstations
☐	☐	05. Storage/Backup (Optical, Disk, Tape, RAID)
☐	☐	06. Printers
☐	☐	07. Printer/Fax/Copier Hybrids (Multifunctional Printers)
☐	☐	08. Minis
☐	☐	09. Mainframes
☐	☐	10. Fax/Modem Boards
☐	☐	11. Memory/Chips/Boards/Cards
☐	☐	12. Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A	B	
☐	☐	13. Network Management
☐	☐	14. Systems Management
☐	☐	15. Security
☐	☐	16. Directory Services
☐	☐	17. Operating Systems
☐	☐	18. Applications Development Tools
☐	☐	19. Database Management/RDBMS
☐	☐	20. Groupware
☐	☐	21. E-Mail
☐	☐	22. Enterprise Resource Planning (ERP)
☐	☐	23. EDI
☐	☐	24. Desktop Videoconferencing
☐	☐	25. Imaging
☐	☐	26. Middleware/Serverware
☐	☐	27. Document Management
☐	☐	28. Site Metering Tools
☐	☐	29. Data Warehousing
☐	☐	30. Anti Virus Software
☐	☐	31. Multimedia
☐	☐	32. Y2K Conversion Software
☐	☐	33. Helpdesk
☐	☐	34. Other Software/Applications

SERVICES

A	B	
☐	☐	35. BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics etc.)
☐	☐	36. Applications Outsourcing
☐	☐	37. Call Center Outsourcing
☐	☐	38. Systems Integration/Consulting
☐	☐	39. Education/Training Services
☐	☐	40. Other Services

None of the above (1 - 40) ☐ 41. ☐

10 Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. CURRENTLY INSTALLED **B. PLANNED FOR PURCHASE**

NETWORK PROTOCOLS

A	B	
☐	☐	01. TCP/IP
☐	☐	02. IPv6
☐	☐	03. SNA
☐	☐	04. Novell IPX/SPX
☐	☐	05. APPC/APPN/LU 6.2
☐	☐	06. NETBIOS/NET BUEI
☐	☐	07. NFS
☐	☐	08. SNMP
☐	☐	09. Other Network Protocols

LAN/WAN ENVIRONMENT

A	B	
☐	☐	10. Gigabit Ethernet
☐	☐	11. Switched Ethernet
☐	☐	12. Fast Ethernet
☐	☐	13. Ethernet
☐	☐	14. ATM
☐	☐	15. Token Ring/Token Ring Switching
☐	☐	16. IP Switching
☐	☐	17. Layer 3, 4 Switching
☐	☐	18. FDDI
☐	☐	19. 100Base-T
☐	☐	20. 10Base-T
☐	☐	21. Fibre Channel
☐	☐	22. Wireless
☐	☐	23. DSL
☐	☐	24. ISDN
☐	☐	25. Frame Relay
☐	☐	26. Private Line T1, T3, FT-1, SONET
☐	☐	27. Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A	B	
☐	☐	28. Windows NT/Windows 2000
☐	☐	29. Novell (Netware 5.X)
☐	☐	30. Novell (NetWare 4.X)
☐	☐	31. Novell (NetWare 2.X, 3.X)
☐	☐	32. LINUX
☐	☐	33. Microsoft (LAN Manager)
☐	☐	34. Banyan (Vines)
☐	☐	35. IBM (LAN Server)
☐	☐	36. Other Network Operating System

COMPUTER OPERATING SYSTEM

A	B	
☐	☐	37. NT Workstation
☐	☐	38. Windows 2000
☐	☐	39. Windows 98/95/3.1
☐	☐	40. Intel Based UNIX
☐	☐	41. RISC based UNIX (incl. SOLARIS)
☐	☐	42. LINUX
☐	☐	43. DOS
☐	☐	44. OS/2, OS/2 WARP
☐	☐	45. OS/400
☐	☐	46. IBM MVS/VM/VSE/ESA
☐	☐	47. Digital VMS
☐	☐	48. Macintosh
☐	☐	49. Other Computer Operating System

None of the above (1 - 49) ☐ 50. ☐

11 Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - MAINFRAMES (Large Scale)
1. ☐ IBM
2. ☐ Other

B - MINIS (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - WORKSTATIONS
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12 What is the estimated gross revenues of your entire company/institution? (check ONE only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13 For which areas outside of the U.S.A. do you have purchase influence? (check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

Form: 9902

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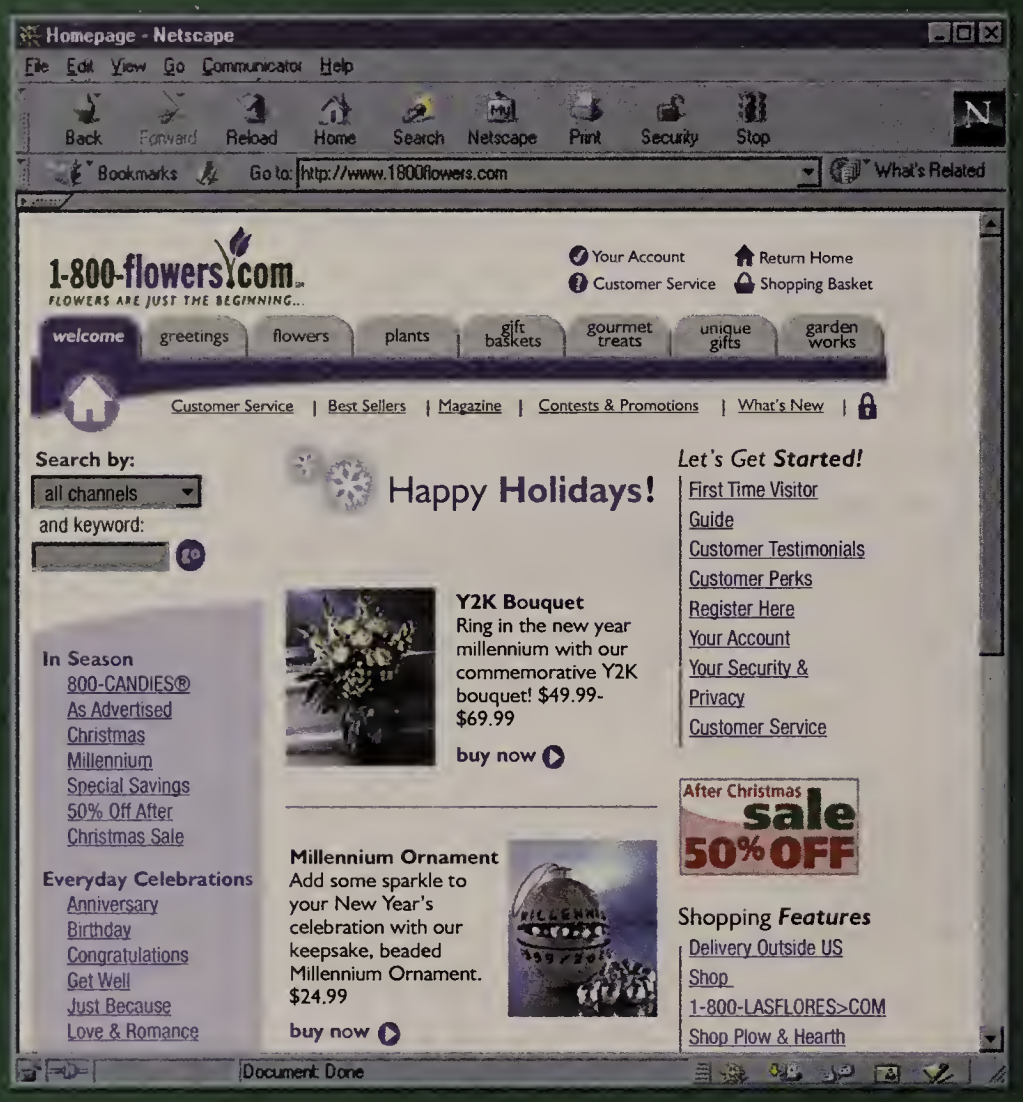

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